EAST MALLING

ANNUAL RESEARCH REPORTS

1913-1953

ABSTRACTS AND INDEX

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COMMONWEALTH MYCOLOGICAL INSTITUTE
21 OCT 1957

The Kent Incorporated Society for Promoting Experiments in Horticulture

ABSTRACTS

AND

INDEX

TO THE

ANNUAL RESEARCH REPORTS

1913—1953

EAST MALLING RESEARCH STATION

Near MAIDSTONE, KENT

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The correct abbreviation of the title of this volume is :—

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FOREWORD

East Malling Research Station is nearly forty-five years of age; its studies of the problems which are met with in the actual culture or growth of fruit trees and plants have been reported from 1913 onwards. Today, the Annual Research Reports represent a mine of information of almost embarrassing detail and extent, derived from the ever expanding research programme of the Station.

In the past the annual indices available have been quite inadequate to render easily accessible, both to grower and to research worker, the information available.

New members of staff have found it increasingly difficult to assimilate work already done and to orientate new lines of research in adequate relation to past experience; the needs of the new member of staff and of the younger generation of fruit growers, rather than of the experienced research worker or grower, have inspired this volume. To fulfil its purpose it had to be something far more useful than a mere index, something that would provide quick and reasonably adequate reference to work already done, so reducing to a minimum the ever present risk of loss of knowledge or of needless duplication of research experience.

Its preparation has required the reading, the indexing, and the detailed study not only of the scientific papers of the last forty years, but also of all those interim reports upon the progress of research which have annually been made available to growers and to research workers.

For over three years the work of abstracting, indexing, cross referencing, and checking has gone on. I have had the privilege of watching the work in progress and, on behalf of all those who may use this volume in the years to come as a tool to aid the advance or application of research in the service of fruit growing, I would pay this tribute of respect, admiration, and thanks to Dr. Andrews and to Mr. Painter for their unflagging tenacity and meticulous care in a task whose magnitude they alone know to the full.

They would be the first to proclaim it less than perfect; nevertheless, their reward will lie in such usage as young research workers and fruit growers may make of it in the future, a reward shared by those who also gave assistance and advice, Dr. Montgomery, Mr. Akenhead, Mr. Argles, and, not least, Miss Simmonds, and the staff of Messrs. Headley Brothers Limited.

F.R.T.

NOTES

Reference to each item is made under the year, shown in bold type, of the Annual Research Report in which it occurs. This is followed by a Roman numeral showing the section of the Report, or the type of entry in which it occurs: I, reports on the Experimental Farm; II, interim reports on research in progress; III, research papers; IV, Growers' Bulletins. The Roman numeral is followed by the page number.

The sections or portions, here indicated by the Roman numeral, into which the Annual Reports have been divided have varied from time to time; the numeral has therefore been used to indicate the *type of information* available in the given reference. This procedure has not been used for references to the very brief Reports between 1913 and 1922 inclusive.

A supplementary report was published for each of the periods 1925, 1926–27, and 1928–29–30; these consisted wholly of research papers. These supplementary reports have been indicated by the inclusion of the letter (S) after the year; e.g. **1926-27**(S), III, 186.

The titles of papers have been printed in bold type as an aid to quick reference.

Normally entries have been indexed under the subject rather than the fruit.

Details of pests and diseases appear under their Common English names; full lists of these together with their scientific names appear in the Appendix. Where there is no Common English name, particulars are given under the name of the species or group heading for pests and under the name of the host for diseases. For simplicity the authority has been omitted from all scientific names.

Full justice to the work of the Plant Protective Chemistry Section on candidate insecticides and fungicides has not been attempted, it being considered that a detailed record of the very numerous chemicals handled over the years would needlessly expand the length of the index. Reference has been mainly confined to the yearly progress reports, in which many of these compounds are mentioned. Only established insecticides and fungicides have been indexed.

We realize that the decision to include a given item under one heading or another must, on many occasions, be a matter of opinion. Nevertheless, we hope that the care given to making reference as easy and as trouble-free as possible will enable users of this volume to find their search for information both pleasant and reasonably speedy.

F.W.A.
A.C.P.

CONTENTS

	PAGE
FOREWORD	iii
NOTES	iv
ABSTRACTS AND INDEX TO THE ANNUAL RESEARCH REPORTS	1
APPENDIX—LIST OF PESTS AND DISEASES MENTIONED IN THE REPORTS ..	157

ADDENDA

The following entries relating to the names of certain pests should be inserted in their appropriate places in the main index. They have been included in the separate list of pests.

Page	4	*Apatele rumicis*	*see under* Knotgrass Moth
,,	31	*Caenorhinus aeneovirens*	(appears as *Rhynchites minutus* in Annual Research Reports) *see under* Beetles, general
		Caenorhinus aequatus . .	*see under* Apple Fruit Rhynchites
		Caenorhinus germanicus	*see under* Strawberry Rhynchites
,,	33	*Ceramica pisi*	*see under* Broom Moth
,,	43	Currant Pug Moth . .	details indexed under Pug Moth
,,	61	Grass Aphid	details indexed under Oat Aphid
,,	73	Large White Butterfly	details indexed under Cabbage White Butterfly
,,	77	Little Longicorn . .	*see under* Little Longhorn Beetle
,,	82	*Metopolophium festucae*	details indexed under Oat Aphid
,,	87	Nut Scale	details indexed under Brown Scale
,,	88	*Ophonus rufipes* . .	*see under* Strawberry Seed Beetle
,,	89	*Pandemis heparana* . .	(appears as *Cacoecia heparana* in Annual Research Reports) *see under* Tortricid moths
,,	116	*Rhynchites aeneovirens* . .	(appears as *Rhynchites minutus* in Annual Research Reports) *see under* Beetles, general
,,	144	*Tarsonemus latus* . .	*see under* Broad Mite
,,	147	*Tuberolachnus saligna* . .	*see under* Large Willow Aphid

ABSTRACTS AND INDEX TO THE ANNUAL RESEARCH REPORTS 1913—1953

Abscission studies — *see also under* Blossom thinning; Fruit drop; Fruit thinning; Growth substances; Leaf fall; NAA spray.
notes on, **1944,** II, 24; **1945,** II, 27; **1946,** II, 30; **1947,** II, 32; **1948,** II, 36; **1949,** II, 33; **1950,** II, 30; **1951,** II, 34; **1952,** II, 30.
Intensive experimental methods in abscission studies, by H. W. B. Barlow: methods of testing growth substances for delaying abscission in apples, and a technique for quantitative application of lanolin emulsion containing growth substances, **1947,** III, 121. Intensive experiments on, **1948,** II, 35. Sulphanilamide to suppress contaminants, **1950,** II, 30. Use of *Lemna* sp. with NAA for abscission studies; optimum growth at 5 p.p.m. with surprisingly marked effect, **1950,** II, 31. Observations on dead leaves retained during winter by normally deciduous trees; plant extract from Manchester University assayed for ability to inhibit abscission; experiments on possible control of 'shattering' of hops; abscission in plum pedicels, **1951,** II, 35; **1952,** II, 30.

Absorption spectrophotometry — new technique in paper strip chromatograms, **1952,** II, 31.

Acaricides — (includes all washes, etc., dealing with egg or other stages of mites). *see under* Black Currant Gall Mite; Fruit Tree Red Spider Mite; Gooseberry Red Spider Mite; Strawberry Mite; Red Spider Mite; and other mites concerned.

Acherontia atropos — *see under* Death's Head Hawk Moth.

Ackermann's plum — new plum rootstock from Germany, **1936,** II, 35.

Acronicta psi — *see under* Broom Moth.

,, *rumicis* — *see under* Knotgrass Moth.

Adoxophyes orana =*Capua reticulana* — *see under* Summer Fruit Tortricid.

Aegeria myopaeformis — *see under* Apple Clearwing Moth.

,, *tipuliformis* — *see under* Currant Clearwing Moth.

Aerosol OT — a wetting agent, **1950,** II, 44, IV, 214.

Agriolimax reticulatus — *see under* Slugs.

Agriotes lineatus — *see under* Wireworms.

Agrobacterium tumefaciens — *see under* Crown Gall.

Agromyza frontalis — *see under* Hop Leaf Miner.

Alcoholic potash — *see under* Ovicides.

Aldrin — *see also under* Codling Moth.
notes on, **1952,** II, 44.

Alessandrini method — for estimating DDT deposits, modified to estimate DDT on bark, **1952,** II, 43.

Aleurodes — *see under Aleyrodes.*

Aleyrodes fragariae — *see under* Whiteflies.

,, *lonicerae* — *see under* Whiteflies.

Aleyrodes, Pear — *see under* Whiteflies.

Aleyrodes sp. — *see under* Whiteflies.

Alkaline soils — **The application of trace elements to alkaline soils; a preliminary note.** by Anne V. Delap, **1949,** III, 116.

Allotrombidium fuliginosum — *see under* Red Velvet Mite.

Almonds–

Bacterial Canker — *see under* Bacterial Canker, almonds.

Brown Rot — *see under* Brown Rot, almonds.

Alsophila aescularia — *see under* March Moth.

Alternaria radicina — *see under* Black Rot, carrots.

,, sp. — *see under* Broccoli, spotting.

Alum — as deterrent for bird damage, **1951,** III, 160.

Ambrosia Wood-boring Beetle — feeding on stems and trunks of derelict apple trees, **1948,** III, 102.

America — **Some observations on the raspberry disease situation in North America,** by R. V. Harris, **1934,** III, 156. **Research developments in fruit culture in America,** by H. B. Tukey, **1952,** III, 47.

American Cyclamen Mite — *see under* Strawberry Mite.

,, Gooseberry Mildew — *see under* Gooseberry Mildew, American.

Ametastegia glabrata — *see under* Dock Sawfly.

Ammonium thiocyanate — use as damaging agent, **1951,** II, 35, III, 115, 119.

Amos Black black currant — *see under* Black currants, Amos Black.

Amos, Jesse — an appreciation, **1944,** 11.

Amos Memorial Lectures — **Fruit research—some thoughts past and future,** by Captain R. Wellington, **1947,** III, 53. **The soil and the fruit tree,** by B. S. Furneaux, **1949,** III, 53. **The fruit tree and its environment,** by Sir Edward Salisbury, **1950,** III, 53. **Developments in fruit growing at home and abroad,** by T. Neame, **1951,** III, 53. **Research developments in fruit culture in America,** by H. B. Tukey, **1952,** III, 47. **Some aspects of growth and development in the fruit plant,** by Prof. R. H. Stoughton, **1953,** III, 51.

Amphitetranychus viennensis — *see under* Red spider mites.

Amphorophora rubi — *see under* Rubus Aphid.

Analysis– — *see also under* Mineral deficiencies *and* Plant injection (with both of which this subject is closely connected).

chemical–

inorganic–

arsenic — determination on apples and pears, **1936,** II, 71, **III,** 240.

boron — notes on, **1950,** II, 34. The quinalizarin method for colorimetric estimation of boron in routine use, **1943,** II, 22.

calcium — notes on, **1950,** II, 34. **Estimation of phosphorus, potassium, calcium, magnesium, iron, manganese, and nitrogen in plant material,** by A. C. Mason, **1949,** III, 111. **A new and rapid method for estimating small quantities of calcium in plant material: a preliminary note,** by A. C. Mason, **1950,** III, 122.

copper — determination on loganberries, **1936,** III, 240.

general — notes on, **1940,** II, 22; **1941,** II, 21; **1946,** III, 91; **1948,** II, 37; **1949,** II, 36; **1950,** II, 34, 36; **1951,** II, 37, 38; **1952,** II, 31, 32; **1953,** II, 34. Plant analysis and mineral deficiencies, **1939,** III, 51, IV, 86; **1943,** IV, 99. All elements except nitrogen determined in dilute acid solution of ash obtained by heating plant material in a muffle furnace at 420–450° C., **1947,** II, 34. **The cleaning of leaves prior to analysis,** by A. C. Mason, **1952,** III, 104.

iron — notes on, **1950,** II, 34; **1953,** II, 35. α,α′-Dipyridyl method of estimating ferrous iron, **1943,** II, 22. Estimation in plant material, **1949,** III, 111; **1950,** II, 34. **Estimation of iron in plant material,**

Analysis–chemical–inorganic–iron–*continued*

by A. C. Mason, **1950,** III, 124. Loss of iron from leaf samples when washing, **1952,** II, 31, III, 104.

magnesium — notes on, **1950,** II, 34; **1951,** II, 37; **1953,** II, 35. Estimation in plant material, **1949,** III, 111; **1950,** II, 34. **A sensitive method for the determination of magnesium using Titan yellow,** by A. C. Mason, **1951,** III, 126.

manganese — estimation in plant material, **1949,** III, 111; **1950,** II, 34.

molybdenum — in apple rootstocks, **1929,** II, 63; **1928-29-30** (S), III, 101.

molybdenum blue — method of estimating phosphorus, **1943,** II, 22.

nitrogen — estimation in plant material, **1949,** III, 111.

phosphorus — notes on, **1950,** II, 34. Estimation by molybdenum blue method, reduction being brought about by quinhydrone and sodium sulphite, **1943,** II, 22. Estimation in plant material, **1949,** III, 111; **1950,** II, 34.

potassium — estimation in plant material, **1949,** III, 111.

rootstocks — *see under* Rootstocks, analysis, chemical.

silicon — notes on, **1953,** II, 34.

zinc — determination of in plants, **1950,** II, 34.

organic — notes on, **1949,** II, 38; **1950,** II, 35; **1951,** II, 37; **1952,** II, 31; **1953,** II, 35, 47. **Organic constituents of the apple tree: preliminary work,** by J. K. Eaton, **1949,** III, 93. **Organic constituents of fruit plants. I. An outline of a method of examination of the water and alcohol soluble constituents,** by A. E. Bradfield and A. E. Flood, **1949,** III, 100.

mass spectrometer — notes on, **1949,** II, 37; **1950,** II, 35; **1951,** II, 37.

polarographic — notes on, **1931,** II, 34; **1942,** II, 21; **1943,** II, 22; **1946,** II, 32.

soil — *see under* Soil analysis.

spectrographic–

arc method — notes on, **1947,** II, 34; **1949,** II, 37; **1950,** II, 35; **1951,** II, 37; **1952,** II, 31; **1953,** II, 34.

flame method — notes on, **1953,** II, 34. Methods of increased sensitivity, **1940,** II, 23. Sources of error in photographic part, **1942,** II, 21. Number of sources of error eliminated, **1943,** II, 22. Method improved in reproducibility and sensitivity, **1947,** II, 34. **A flame method of spectrographic analysis,** by F. H. Vanstone and H. J. Philcox, **1949,** III, 105. Use of spectrographic method to compare vegetative and fruiting parts of Cox trees, **1950,** II, 36. **A quantitative method of flame spectrographic analysis,** by F. H. Vanstone, **1951,** III, 122. Ramage method, **1938,** II, 72; **1939,** II, 27; **1940,** II, 23; **1942,** II. 21; **1943,** II, 22; **1950,** II, 34.

general — notes on, **1946,** III, 92.

rootstocks — *see under* Rootstocks, analysis, spectrographic.

spark method — notes on, **1941,** II, 21; **1942,** II, 21.

Anaspis humeralis — *see under* Beneficial insects and mites, pollinators.

Anatomical studies — *see under* Histological investigations.

Aneurus laevis — *see under* Flat Bug.

Anemometers — *see under* Wind.

Angular Leaf Spot — notes on; cause assumed to be *Phyllosticta angulata,* **1938,** III, 168. **The Angular Leaf Spot of apple trees,** by H. Wormald: first noticed in England in 1937; possibly due to a *Phyllosticta* sp. or *Clado-*

Angular Leaf Spot–*continued*

sporium sp., **1939,** III, 63. Spots caused by saprophytes living on tissues killed by a froghopper, **1940,** III, 57.

Anisandrus dispar — *see under* Shot-hole Borer.

Anisopteryx aescularia — *see under* March Moth.

Ant Beetle — larvae predacious on Large Fruit Bark Beetle and Fruit Bark Beetle, **1947,** III, 135.

Anthocorid bugs — *see also under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.
observations on, **1935,** III, 167; **1947,** III, 139. Observations on *Triphleps laevigatus* and *T. minutus,* **1939,** III, 71.

Anthocoris nemoralis — *see under* Anthocorid bugs.

,, *nemorum* — *see under* Anthocorid bugs.

Anthonomus cinctus — *see under* Apple Bud Weevil.

,, *pomorum* — *see under* Apple Blossom Weevil.

,, *rubi* — *see under* Strawberry Blossom Weevil.

Anthophila pariana — *see under* Apple Leaf Skeletonizer.

Antirrhinum Leaf Spot — notes on; caused by *Cercosporella antirrhini,* **1925 (S),** III, 84.

,, Rust — due to *Puccinia antirrhini,* **1933,** III, 146.

Anuraphis amygdali — *see under* Peach Aphid.

,, *crataegi* — *see under* Rosy Leaf-curling Aphid.

,, *farfarae* — *see under* Pear-Coltsfoot Aphid.

,, *padi* — *see under* Leaf-curling Plum Aphid.

,, *roseus* — *see under* Rosy Apple Aphid.

,, *subterranea* — *see under* Pear-Hogweed Aphid.

Anystis agilis — *see under* Beneficial insects and mites, predators, general.

Aphelenchoides besseyi — *see under* Leaf and Bud eelworms.

,, *fragariae* — *see under* Leaf and Bud eelworms.

,, *ribes* — *see under* Leaf and Bud eelworms.

,, *ritzema-bosi* — *see under* Leaf and Bud eelworms.

Aphelinus mali — *see under* Woolly Aphid Parasite.

Aphids– — *see also under* individual fruits and common names of aphids (for full list of names appearing in Index, see pages 158-168); Greenhouse pests.

miscellaneous — *Aphis rubiphila,* vector of Leaf Curl of raspberries, **1950,** III, 127. *Aphis schneideri,* vector of Gooseberry Vein-banding, **1951,** III, 133.

Aphis fabae — *see under* Black Bean Aphid.

,, *grossulariae* — *see under* Gooseberry Aphid.

,, *idaei* — *see under* Raspberry Aphid.

,, *pomi* — *see under* Green Apple Aphid.

,, *rubiphila* — *see under* Aphids, miscellaneous.

,, *rumicis* — *see under* Black Bean Aphid.

,, *schneideri* — *see under* Aphids, miscellaneous.

Aphodius fimetarius — *see under* Beetles, dung.

Aphthona euphorbiae — *see under* Large Flax Flea Beetle.

Apion apricans — *see under* Clover Seed Weevil.

,, *dichroum* — *see under* Weevils.

,, *nigritarse* — *see under* Weevils.

Apis mellifera — *see under* Apples, blossoming.

Apocheima pedaria — *see under* Pale Brindled Beauty Moth.

Appelia schwartzi — *see under* Peach Aphid.

Apple(s)–

Angular Leaf Spot — *see under* Angular Leaf Spot.

aphids — *see also under* Black Bean Aphid; Green Apple Aphid; Oat-Apple Aphid; Potato Aphid; Rosy Apple Aphid; Rosy Leaf-curling Aphid; Woolly Aphid.
biology of, **1950,** II, 42; **1952,** II, 40. **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

bark — chemical examination of, **1931,** II, 35.

biennial bearing — *see under* Biennial bearing.

Bitter Pit — *see under* Functional disorders, Bitter Pit.

Black Rot and Leaf Spot — *see under* Black Rot, apples.

blossoming — *see also under* Blossoming; Juvenile phase; Rootstocks, apple.
Observations on apple blossom morphology in relation to visits from Honey Bees (*Apis mellifera*), by A. P. Preston: bees have difficulty in reaching floral nectaries of Bramley's Seedling owing to connate stamens, **1948,** III, 64. **Forecasting the time of blossoming in apple trees from temperature records,** by S. C. Pearce and A. P. Preston: attempts made to forecast time of blossoming (50%) on trees of Bramley's Seedling and Worcester Pearmain, both on M.I, using accumulated day degrees; not highly successful, but gives suggestions for improvement, **1953,** III, 133.

blossoming, delaying — *see under* Blossoming, delaying.

blossom thinning — *see under* Blossom thinning.

Blossom Weevil — For further experiments, relating mainly to impregnation of tree banding materials, *see under* Tree banding.
observations on, **1931,** II, 43; **1932,** II, 46, III, 110; **1933,** III, 180; **1938,** IV, 257; **1939,** II, 30; **1941,** II, 23; **1942,** III, 64. Most practical method of control is trapping weevils in sacking bands, **1923,** II, 95. **The control of the Apple Blossom Weevil,** by A. M. Massee: tested hens, jarring, grease banding, and trapping methods, including sack bands for collecting weevils going into hibernation; last considered best, **1924,** III, 145. **The control of the Apple Blossom Weevil: a summary of results,** by A. M. Massee, **1926,** IV, 66. **The Apple Blossom Weevil: the results of further investigations upon its control,** by A. M. Massee: use of corrugated cardboard bands, **1929,** IV, 89. Corrugated cardboard bands better traps than 'sack band' traps, **1930,** II, 102. In tests with derris dusts some treatments in bands tended to keep both birds and mice away, **1933,** II, 53. **An experiment on the control of the Apple Blossom Weevil (*Anthonomus pomorum* (L.) Curt.) by means of a derris dust,** by G. L. Hey, A. M. Massee, and W. Steer: derris dust halved injury caused by Apple Blossom Weevil if applied at green bud stage, but no appreciable effect if applied a week earlier, **1933,** III, 217. **Field spraying and dusting trials on the control of Apple Blossom Weevil and Apple Sawfly in 1934,** by W. Steer and F. J. D. Thomas: dusts in general not very satisfactory for Apple Blossom Weevil and nicotine spray unsuccessful against eggs, but a derris dust reduced capped blossoms by about 50% while barium silicofluoride dust ineffective, **1934,** III, 194. Hens dislike Apple Blossom Weevil, **1936,** III, 232. Three control measures investigated: (1) repellents, (2) atomised pyrethrum spray, and (3) use of trap

Apple(s)–Blossom Weevil–*continued*

bands, **1940,** II, 25. Associated with Bacterial Blossom Blight of pear, **1942,** II, 22. Repellents and dusts investigated; overwintering weevils on trees for seven weeks, and egg-laying continued for fifteen days, **1942,** II, 24. Directions how to dispose of 'capped blossoms' and capture parasites, **1943,** III, 61. Consistently good results in laboratory and field trials with dusts containing 5% DDT and 3% 666; 1% rotenone dusts useless; good kills of weevils hibernating in sack bands obtained by routine tar washing, **1944,** II, 28. **Observations on the life cycle of the Apple Blossom Weevil (*Anthonomus pomorum* (L.) Curt.),** by R. M. Greenslade, **1944,** III, 83. Oviposition is closely related to bud development, beginning at the bud burst stage and continuing for three weeks, **1945,** II, 36. **The Apple Blossom Weevil and its control,** by G. H. L. Dicker, **1945,** IV, 140. Efficacy confirmed of 5% DDT dust applied at bud burst and a week later; 5% BHC found inferior; excellent control by adding DDT to winter petroleum spray; also controlled by DDT in routine DNC and tar oil spray, **1946,** II, 38. Good control obtained by adding DDT to winter washes, **1947,** II, 40; **1948,** II, 42; **1950,** I, 18. **The Apple Blossom Weevil,** by G. H. L. Dicker: controlled by DDT, **1948,** IV, 152. Records to observe rate of reinfestation following complete control by DDT in 1948, **1951,** II, 43; **1952,** II, 39.

Blotchy Pit — *see under* Functional disorders, Blotchy Pit.

Bordeaux-wetter damage — *see under* Spray damage.

boron deficiency — *see under* Boron.

Branch Blister — *see under* Branch Blister.

breeding — *see under* Breeding, top fruits, apples; Breeding, top fruits, root-stocks, apple.

Brown Rot — *see under* Brown Rot, apples.

Bud Disease — *see under* Bud Rot.

Bud Rot — *see under* Bud Rot.

bud rubbing — *see under* Bud rubbing.

Bud Weevil — observations on, **1926-27** (S), III, 157; **1938,** III, 180.

Canker — *see also under* Rough Bark Canker, apples; Surface Canker, apples. notes on, **1931,** III, 47; **1934,** III, 144; **1936,** III, 188; **1940,** III, 56; **1942,** IV, 105; **1946,** II, 35. Effect of rootstock, **1920-21,** 5; **1924,** II, 107; **1926,** II, 58. **Some field observations on Apple Canker (*Nectria galligena*),** by M. H. Moore: spray treatment had little effect on cumulative incidence of Apple Canker; influence of rootstock on scion-susceptibility to canker was observed; importance of cutting out all infected tissue when removing cankers is stressed, **1933,** III, 166. Evidence of depressing effect on canker by grassing down Cox, **1942,** II, 27. Spraying trials gave conflicting results, **1947,** II, 38. **Note on association of *Botrytis cinerea* with an apple canker and with various symptoms on sundry other hosts,** by M. H. Moore: *Botrytis cinerea* is noted as probable cause of cankers and rotting in apple and various other hosts, **1948,** III, 101. Determination of period of natural infection, **1949,** II, 41. Tests made to determine merits of autumnal protectant spraying, **1951,** II, 42. Influence of manuring, **1952,** II, 34.

Capsid — *see also under* Insect fauna.
observations on, **1932,** II, 47; **1936,** III, 227; **1940,** III, 62; **1944,** II, 28, 30, III, 82; **1945,** II, 36; **1952,** III, 148. Apple Capsid Bugs in East Malling district, **1926-27** (S), III, 159. Winter spraying

trial gave considerable control by use of petroleum and tar-petroleum washes, **1931,** II, 44. **Two Apple Capsid spraying trials and some notes on spray damage,** by W. Steer: good control with petroleum oil emulsions and tar-petroleum mixture; tar-petroleum mixture, though effective against Capsid, caused serious bud injury, **1932,** III, 132. Nymphs easily killed by contact with droplets of atomised pyrethrum sprays, but several applications needed to achieve satisfactory results; not as good as winter spraying with petroleum oil, **1939,** II, 32. Petroleum emulsion was less effective when applied on 29th February than on 20th March or 2nd April; concentration can be reduced from 6% to 5% for late spraying, **1940,** II, 28. **Spray damage and Apple Capsid control by winter petroleum,** by W. Steer and M. H. Moore: spraying trials to determine influence of period of spraying on spray damage and on the degree of control of Apple Capsid, **1940,** III, 76. Testing of certain ovicides, **1944,** II, 28. Comparing early and late applications of ovicides, **1947,** II, 40. Controlled by DDT at green cluster using 0·1% DDT wash (5 lb. 20% wettable powder per 100 galls.), **1947,** III, 138. **A note on the effect of DDT in tar oil against the Apple Capsid (*Plesiocoris rugicollis* Fall.),** by G. H. L. Dicker: emphasizes need for caution when using DDT lest encourage other pests than that controlled, **1949,** III, 141. DDT effective against, **1951,** I, 20.

chlorosis — *see under* Chlorosis.

Clearwing Moth — observations on, **1938,** III, 182; **1953,** III, 162. Treatment of trunk with a DDT preparation, **1950,** III, 143. Spray tree trunks with 10% tar-oil winter wash at end of May, **1951,** III, 156.

Collar Rot — *see under* Collar Rot.

Coral Spot — *see under* Coral Spot.

cordons — *see under* Intensive fruit culture, cordons.

cracking — *see under* Fruit splitting.

cropping — *see also under* Apples, Experimental Farm.
The production of fruit from four experimental apple plantations at East Malling, 1920-42, by T. N. Hoblyn, **1942,** IV, 96. **Failure of apple and pear trees to crop,** by A. C. Painter, **1946,** IV, 154.

crotch angles — *see under* Crotch angles, control of.

Crown Gall — *see under* Crown Gall, apples.

'The Death' — *see under* Functional disorders, 'The Death'.

defeathering — *see under* Defeathering.

dessert — *see under* Apples, plantations.

development — *see also under* Growth.
Some observations on the time of development of the fruit seed and embryo in apple, by P. K. Sen: studied development in Beauty of Bath and Bramley's Seedling; seed reached full size at end of June while fruit was only two-thirds of final width; seed in Beauty of Bath reached full size only a week earlier than that of Bramley's Seedling; seeds in fruit of apple reached full size well before time of fruit bud differentiation, **1936,** III, 137.

dieback — use of anatomical characteristics to study dieback on apple trees in spring of 1951, **1951,** II, 26.

double-working — *see under* Double-working, apples.

dwarf pyramids — *see under* Intensive fruit culture, dwarf pyramids.

embryo — *see under* Apples, development.

Apple(s)–*continued*

espaliers — *see under* Intensive fruit culture, espaliers.

Experimental Farm — acreage, cropping, and general notes, **1929,** I, 25; **1930,** I, 32; **1931,** I, 15; **1932,** I, 17; **1933,** I, 19; **1934,** I, 24; **1935,** I, 20; **1936,** I, 19; **1937,** I, 22; **1938,** I, 26; **1939,** I, 14; **1940,** I, 11; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 11; **1946,** I, 11; **1947,** I, 15; **1948,** I, 17; **1949,** I, 15; **1950,** I, 15; **1951,** I, 17; **1952,** I, 15; **1953,** I, 17.

Eye Rot — *see under* Eye Rot, apples.

fibres — *see under* Fibres.

frameworking — *see under* Grafting.

frost damage — *see under* Frost damage investigations, apples.

fruit drop — *see under* Fruit drop.

Fruit Miner — *see under* Apple Fruit Moth.

,, Moth — observations on, **1932,** III, 113. Control by arsenical or derris spray applied in June, **1951,** III, 156.

,, Rhynchites — observations on, **1931,** III, 53; **1934,** III, 170; **1944,** III, 78; **1945,** III, 90; **1946,** III, 125. Derris dust applied at pink-bud stage controlled it, **1942,** III, 64.

,, Tortrix — *see under* Tortricid moths.

functional disorders — *see under* Functional disorders.

Glassiness — *see under* Functional disorders, Water Core.

Green Blotch — *see under* Frost damage investigations, apples.

growth — *see under* Apples, development; Growth; Tree size; Tree vigour.

Harvest — *see under* Apples, varieties, Harvest.

Howgate Wonder — *see under* Apples, varieties, Howgate Wonder.

irrigation — *see under* Irrigation, apples.

Jonathan — *see under* Apples, varieties, Jonathan.

juice — presence of blastocollin and chlorogenic acid, **1952,** II, 24.

juvenile phase — *see under* Juvenile phase.

keeping quality — *see also under* Storage.
effect of rootstock, **1934,** IV, 227. **A tree injection experiment on the keeping quality of apples: a progress report,** by A. C. Hulme, B. F. G. Levy, and W. A. Roach, **1936,** III, 185. Effect of irrigation, **1940,** II, 16.

lateral growths, removal — *see under* Defeathering.

leaf-bud cuttings — *see under* Propagation, cuttings, leaf-bud.

Leaf Gall Mite — *see under* Leaf and Bud Mite.

leafhoppers — *see under* Leafhoppers, apples.

Leaf Miner — observations on, **1938,** III, 181; **1946,** III, 127; **1950,** III, 144.

leaf relations, influence of rootstock — *see under* Rootstocks, influence on leaf relations.

leaf scorch — *see under* Leaf scorch, apples.

Leaf Skeletonizer — observations on, **1937,** III, 207. Controlled by a thorough application of lead arsenate after petal fall, **1942,** III, 65.

Leaf Spot — *see under* Black Rot, apples.

leaves — *see under* Carbohydrate relations; Carotene; Chlorophyll; Sugars, estimation of.

leaves, chlorosis in — *see under* Chlorosis.

Apple(s)–*continued*

Lenticel Spotting — *see under* Functional disorders, Lenticel Spotting.

manuring — *see under* Manuring, apples.

marketing — *see under* Marketing, fruit.

Martinmas — *see under* Apples, varieties, Martinmas.

Michaelmas Red — *see under* Apples, varieties, Michaelmas Red.

Mildew — notes on, **1926-27** (S), III, 81, 114; **1931,** II, 39; **1932,** II, 42; **1933,** II, 50; **1936,** III, 188; **1952,** II, 44. Effect of rootstock, **1924,** II, 108; **1926,** II, 57; **1927,** II, 55; **1928,** II, 97; **1929,** II, 67; **1930,** II, 87. Trials with lime-sulphur and Bordeaux mixture, **1927,** II, 55; **1928,** II, 100; **1929,** II, 70. **Preliminary report on incidence and control of Apple Scab and Apple Mildew,** by A. M. Frampton, **1926-27** (S), III, 96. Effect of scab sprays, **1932,** III, 90. Low volume spraying with atomized concentrated lime-sulphur, **1951,** II, 42. Testing of new organic fungicides, including DNOPC, against Apple Mildew, and determination of relation between dosage and concentration, **1952,** II, 37. Attempt to develop a greenhouse method of assaying chemicals against Apple Mildew, **1952,** II, 43. Notes on fungicidal investigations, **1953,** II, 41. No compound as efficient as DNOPC, **1953,** II, 47. Apple Mildew controlled on Lane's Prince Albert, without damage, by DNOPC as a 25% wettable powder, **1953,** II, 48.

mite (*Phyllocoptes schlechtendali*) — *see under* Leaf and Bud Mite

Mosaic — notes on, **1949,** II, 41; **1950,** II, 39. Preliminary trials with Green Apple Aphid and Rosy Apple Aphid as possible vectors gave negative results, **1948,** II, 40. **A preliminary report on strains of the apple mosaic virus,** by A. F. Posnette and R. Cropley; divided into severe mosaic strain, mild vein-banding strain, and mild mosaic strain, **1951,** III, 128. Mutual antagonism exists between some strains, **1953,** II, 39.

mulching — *see under* Mulching, dung; Mulching, straw.

mycorrhiza — *see under* Mycorrhiza.

October Pippin — *see under* Apples, varieties, October Pippin.

Papery Bark Canker — *see under* Papery Bark Canker.

phytotoxicity tests — *see under* Spray damage.

picking — *see also under* Apples, Experimental Farm; Brown Rot, apples. **Apples should be picked with their stalks,** by H. Wormald, **1932,** IV, 147. Effect of NAA spray and delay in picking on fruit drop and storage behaviour of Cox, **1948,** III, 86; **1951,** III, 112.

Pink Rot — *see under* Pink Rot.

plantations, general — *see also under* Apples, cropping; East Malling Research Station, general; Farm, Experimental, reports. **The dessert apple plantation of tomorrow: what to plant and how to plan it in the light of present day knowledge,** by T. N. Hoblyn, **1945,** IV, 115.

pollination — *see under* Pollination and pollen influence.

and Plum Casebearer — on cherries, **1937,** III, 206. Observations in 1952; controlled by 0·1% DDT applied at end of May, **1952,** III, 146.

pot culture — use of blood, **1952,** I, 19.

propagation — *see under* Propagation, apples.

pruning — *see under* Pruning, apples.

Psocid — *see under* Booklouse.

Apple(s)–*continued*

rootstocks — *see under* Rootstocks, apple.

Rubbery Wood — *see under* Rubbery Wood.

Sawfly — *see also under* Spraying, general.
observations on, **1926,** II, 64; **1931,** II, 39, 41; **1932,** II, 45, III, 111; **1934,** II, 61; **1936,** II, 72, III, 226; **1938,** IV, 256; **1943,** III, 62; **1945,** II, 39; **1946,** II, 42; **1947,** II, 44; **1948,** II, 45; **1949,** II, 46, III, 127; **1950,** II, 42, 45. Larvae may burrow in soil at East Malling to thirty inches below surface, **1929,** II, 80. Neither a pyrethrum preparation nor an arsenical spray gave satisfactory control, **1930,** II, 102. **Some incidental effects of routine scab-sprays, with special reference to Apple Fruit Sawfly-control: a sidelight on the interpretation of field spraying experiments,** by M. H. Moore—*see under* Spraying, general, **1932,** III, 90. Field spraying and dusting trials, **1933,** II, 53. **Experiments on the control of the Apple Sawfly (*Hoplocampa testudinea* Klug): the results of one season's field trials and some considerations arising from them,** by G. L. Hey and W. Steer: adult susceptible to a derris dust; the egg is susceptible to nicotine and derris (each with soap) at the concentrations used; migrating larvae arrested by a derris dust, by derris and soap, and by nicotine and soap, each applied eighteen days after petal-fall, **1933,** III, 197. **Miscellaneous observations on Apple Sawfly (*Hoplocampa testudinea* Klug) in 1933,** by G. L. Hey and W. Steer, **1933,** III, 234. **Apple Sawfly—some suggestions for control measures,** by G. L. Hey, M. H. Moore, and W. Steer, **1933,** IV, 258. Nicotine gave good control in egg stage, **1934,** II, 61. **Field spraying and dusting trials on the control of Apple Blossom Weevil and of Apple Sawfly in 1934,** by W. Steer and F. J. D. Thomas: Sawfly eggs very susceptible to nicotine, and derris can control migratory larvae and prevent most of secondary damage, **1934,** III, 194. 'Guesarol' inferior to nicotine when applied at optimum time for control, but little difference when applied a week later, **1943,** II, 27. First post-blossom nicotine spray should be applied when 80% of petals have fallen, **1943,** III, 62. Spraying trial to determine effect of applying parathion at various dates after petal-fall, **1949,** II, 43. **Field experiments on the control of Apple Sawfly, *Hoplocampa testudinea* (Klug), by some synthetic insecticides,** by R. G. Davies and J. K. Eaton: γBHC, parathion, chlordane give equal or better control than a petal-fall spray of nicotine, **1949,** III, 146. 2 lb. BHC (50% dispersable powder), lime-sulphur ¾–1 gal., water 99 gal. gave satisfactory control, **1950,** III, 144. **Chemicals for the control of Apple Sawfly,** by A. H. M. Kirby: excellent control with BHC, but destroys predators of Fruit Tree Red Spider Mite, **1950,** IV, 213. BHC very effective against Apple Sawfly, but destroys predators of Red Spider Mite, **1952,** III, 147. **Studies on control of Apple Sawfly, *Hoplocampa testudinea* (Klug). I. Effect of time of spraying,** by G. H. L. Dicker and J. B. Briggs. 0·0075% or 0·01% parathion effective immediately after 80% petal-fall, **1952,** III, 151.

Scab — *see also under* Spraying, general; *Venturia inaequalis*.
notes on, **1924,** III, 114; **1925 (S),** III, 78; **1926-27 (S),** III, 80, 113; **1931,** II, 39; **1932,** II, 42, III, 81; **1933,** II, 50; **1934,** II, 61; **1935,** II, 67, 69; **1936,** II, 72, 75; **1937,** II, 84, 85, 87; **1938,** II, 83, 85, III, 168; **1939,** II, 33; **1940,** II, 27; **1941,** II, 21, 25; **1942,** II, 26, 27, IV, 104; **1943,** II, 27; **1944,** II, 26, 30; **1945,** II, 32, 40; **1948,** I, 17, II, 45, 47; **1949,** II, 41, 45, 46; **1950,** II, 45; **1951,** II, 42, 46; **1952,** II, 42; **1953,** II, 37, 46. Observations on action of silver and iron salts on, **1917-18,** 10. Pruned trees freer than unpruned, **1918-19,**

13. **Fungicidal spraying of apples,** by N. H. Grubb and N. B. Bagenal, **1923,** III, 120. Effect of rootstock, **1926,** II, 58; **1927,** II, 55; **1928,** II, 97; **1929,** II, 67; **1930,** II, 87; **1951,** II, 25. Trials with lime-sulphur and Bordeaux mixture, **1927,** II, 55; **1928,** II, 100; **1929,** II, 70. **Preliminary report on the incidence and control of Apple Scab and Apple Mildew,** by A. M. Frampton: Cox very susceptible to wood infection by scab fungus but stock on which worked has considerable influence on powers of resistance; stock has no detectable influence on foliage infection by scab fungus, **1926-27** (S), III, 96. **Apple Scab at East Malling,** by M. H. Moore: gives details of time of application and other important points in application for successful control, **1929,** IV, 72. **The effect of meteorological conditions on Apple Scab, with special reference to the control of the disease,** by M. H. Moore, **1928-29-30** (S), III, 157. Manuring, grassing down, and rootstock all shown in 1931 to have exerted influence on degree of susceptibility to Apple Scab infection, **1931,** II, 40. **Some fundamental considerations regarding successful control of Apple Scab,** by M. H. Moore, **1931,** IV, 73. **Some incidental effects of routine scab-sprays, with special reference to Apple Fruit Sawfly-control—a sidelight on the interpretation of field spraying experiments,** by M. H. Moore—*see under* Spraying, general, **1932,** III, 90. Lesions developing during storage are different in appearance from ordinary scab spots on fruit in open, **1934,** II, 62. **The development of scab in stored apples,** by H. Wormald: spots may appear during storage on apples that are apparently quite sound when picked, and are different from ordinary scab spots, **1934,** IV, 232. Very weak Bordeaux mixture (2: 10: 100) gave good scab control, but caused severe fruit russeting, while two pre-blossom sprays gave no better control than one, **1936,** II, 72. Suggestion that incidence of scab was greatest in the presence of excess nitrogen and least scab was found where potassium alone was given, **1936,** II, 75. **Field trials in 1937 of the fungicidal and phytocidal properties of certain sprays used against Apple Scab: a progress report,** by M. H. Moore: tested sprays containing sulphur and copper, **1937,** III, 229. Trial to determine influence of differential manuring with artificials on the incidence of disease on Worcester Pearmain, Cox, Allington Pippin, and Newton Wonder on M.IX rootstock, **1938,** II, 87. Recent work on, **1938,** IV, 253. **Apple Scab control: the problem, and some recent research findings as regards its solution,** by M. H. Moore, **1938,** IV, 265. **A brief review of research work at East Malling on the control of Apple Scab,** by M. H. Moore, **1939,** III, 75. Lime-sulphur and colloidal sulphur gave good control when used twice pre- and three times post-blossom, or when either spray used twice pre-blossom followed three times post-blossom by the other; polysulphide sulphur was fungicidally, acaricidally, and phytotoxically the more potent, though cheaper, unit, **1940,** II, 27. Notes on storage scab, **1940,** III, 57. Zinc-lime 'Bordeaux', though practically non-fungicidal to *Venturia inaequalis* conidia, is able to limit scab infection in the field, possibly through acting as a nutrient; incorporating a fungicide in arachis oil and dipping apples in it, gave no control of fruit storage rots, but dipped fruits showed less rotting than undipped, **1941,** II, 26. Colloidal sulphur alone and lime-sulphur alone, or as mixtures with commercial elementary sulphur preparations, were most effective against scab; spraying Allington Pippin and Worcester Pearmain in full bloom with 1% lime-sulphur or with 0·5% colloidal sulphur proved beneficial against Apple Scab and did not decrease crop, **1942,** II, 26. Well-

Apple(s)–Scab–*continued*

grown trees with annual ammonium sulphate dressings were more susceptible to Apple Scab; weakly trees of same varieties showed no such indication; beneficial effect of spraying with zinc sulphate-lime 'Bordeaux' on incidence of scab on foliage, **1942,** II, 27. Promising method of measuring intensity of disease on apple foliage received extensive field test on a statistical basis, **1943,** II, 24. Lime-sulphur best control of sulphur group; phenyl mercury chloride was outstanding, **1943,** II, 27. **Why does my spray-programme for scab break down?**, by M. H. Moore, **1943,** IV, 107. Preparations of phenyl mercury chloride were further tested and found promising, **1946,** II, 35. Phenyl mercury chloride at 0·005% in a sulphite lye dispersion or on china clay was as effective on Cox as a full-time lime-sulphur schedule, but control was indifferent; phenyl mercury chloride at 0·01% appeared to be safe in china clay and lead arsenate preparations, but in sulphite lye caused spray damage; lead arsenate preparations proved fungicidally inferior to the mercurial on china clay, or with sulphite lye, or methyl cellulose, **1946,** II, 42. Use of unworked apple rootstocks for testing scab fungicides, **1947,** II, 38. Phenyl mercury chloride not as effective as full-scale schedule of lime-sulphur, **1947,** II, 39. Phenyl mercury chloride at 0·01% dispersed with methyl cellulose was fungicidally similar to sulphite lye dispersion at the same strength, both sprays causing some damage, **1947,** II, 44. Marked interspecific nutritional differences and wide variations between isolates in response to inhibitors from the hosts, **1950,** II, 38. SR406 successful fungicide against Apple Scab, **1950,** II, 45; **1951,** II, 48; **1952,** II, 37, 44. Studies of isolates of; determination of relative pathogenicity of six isolates of Apple Scab and Pear Scab, **1951,** II, 40. **An intensive field method for testing fungicides for apple trees,** by M. H. Moore: use of unworked apple rootstocks to test scab fungicides, **1951,** III, 139. Chemical aspects of resistance to, **1952,** II, 32. Pathogen *in vitro* stimulated or inhibited by sap constituents from phenolic fraction; influence of manuring on incidence of scab, **1952,** II, 34. Satisfactory control from SR406 and a glyoxalidine preparation; one of the nitrosopyrazoles promising, but thiocarbamates unreliable, **1952,** II, 37.

Scald — *see under* Storage, apples.

seed — *see also under* Apples, development.
germinating, **1952,** I, 19.

seedlings, shortening the juvenile phase — *see under* Juvenile phase.

Silver Leaf — *see under* Silver Leaf, apples.

soil management — *see under* Cover cropping; Manuring; Mulching.

Sooty Blotch — *see under* Sooty Blotch.

splitting — *see under* Fruit splitting, apples.

spray damage — *see under* Spray damage.

spraying — *see under* Spraying.

spraying, field trials — *see under* Spraying, general.

spur, life history — *see also under* Biennial bearing.
notes on, **1948,** II, 26; **1949,** II, 25; **1950,** II, 23.

Stalk-End Rot — *see under* Stalk-End Rot.

stem-bark-wood relationship — *see under* Histological investigations.

stem-building — *see also under* Double-working, apples; Double-working, general.
notes on, **1937,** II, 45.

storage — *see under* Storage, apples.

Apple(s)–*continued*

straw mulching — *see under* Mulching, straw.

Sucker — observations on, **1941,** III, 50; **1947,** III, 138. **A note on Apple Sucker,** by A. M. Massee: controlled by a 5% tar-distillate winter wash during December, January, or February; also by spraying with nicotine (8 oz. to 100 gal. of water) in the spring between the green-cluster stage and the pink-bud stage at a pressure of 300 lb. per square inch and directed at flower trusses, **1942,** IV, 107.

Surface Canker — *see under* Surface Canker.

Surface-eating Tortrix — *see under* Tortricid moths.

thinning — *see under* Fruit thinning, apples.

Tortrix moths — *see under* Tortricid moths.

Twig Cutter — observations on, **1931,** III, 53; **1945,** III, 90.

Tydeman's Early Worcester — *see under* Apples, varieties, Tydeman's Early Worcester.

,, Late Cox — *see under* Apples, varieties, Tydeman's Late Orange.

,, Late Orange — *see under* Apples, varieties, Tydeman's Late Orange.

uniformity trial — *see under* Uniformity trials.

varieties– — *see also under* Apple plantations.

breeding — *see under* Breeding, top fruits, apples.

collections, trials, and classification — notes on, **1919-20,** 5; **1920-21,** 6; **1931,** II, 26; **1932,** II, 28; **1942,** II, 16; **1944,** II, 19; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1950,** II, 24; **1951,** II, 29; **1953,** II, 26. **Apple variety collection,** by H. C. Chapelow: deals with performance of collection of 80 apple varieties to end of eleventh year from planting, **1932,** III, 58.

Harvest — notes on, **1946,** II, 20; **1953,** II, 26.

Howgate Wonder — notes on, **1951,** I, 19; **1952,** I, 16.

Jonathan — chosen for inclusion in trials of new rootstocks for its international interest; outstanding for precocity, **1949,** II, 21. Responded particularly well to light pruning, **1952,** I, 16.

Martinmas — notes on, **1946,** II, 20; **1953,** II, 26.

Michaelmas Red — notes on, **1946,** II, 20; **1952,** II, 25; **1953,** II, 26. **Michaelmas Red—a new dessert apple,** by H. M. Tydeman, **1951,** III, 100.

October Pippin — notes on, **1946,** II, 20; **1953,** II, 26.

Tydeman's Early Worcester — notes on, **1945,** II, 20; **1946,** II, 20; **1950,** II, 24; **1953,** II, 26. **Two new apple varieties bred at East Malling,** by H. M. Tydeman: Tydeman's Early Worcester and Tydeman's Late Cox, **1945,** IV, 121.

Tydeman's Late Cox — *see under* Apples, varieties, Tydeman's Late Orange.

Tydeman's Late Orange — notes on, **1946,** II, 20; **1950,** II, 24; **1953,** II, 26. **Two new apple varieties bred at East Malling,** by H. M. Tydeman: Tydeman's Early Worcester and Tydeman's Late Cox, **1945,** IV, 121. **A new apple variety: Tydeman's Late Orange (formerly called Tydeman's Late Cox),** by H. M. Tydeman, **1948,** III, 75. From cross between Laxton's Superb and Cox's Orange Pippin; distributed for general cultivation, **1949,** II, 26.

virus diseases — *see also under* Apple Mosaic; Chat Fruit; Chlorosis; Propagation, virus diseases; Rubbery Wood; Virus diseases, heat treatment, apples.

vectors — *see under* Apple Mosaic.

virus-free varieties — attempts to obtain by heat treatment, **1951,** II, 42.

Water Core — *see under* Functional disorders, Water Core.

water relations — *see under* Water relations.

Apple(s)–*continued*

weedkillers — *see under* Weedkillers, apples.

Whitefly — *see under* Whiteflies.

Woolly Aphid — *see under* Woolly Aphid.

Apricots–

Bacterial Canker — *see under* Bacterial Canker, apricots.

bacteriosis — *see under* Bacterial Canker, apricots.

Brown Rot — *see under* Brown Rot, apricots.

frost damage — *see under* Frost damage investigations, apricots.

layer beds, wilting in — *see under* Layer beds, *Prunus* spp., wilting in.

Leaf Spot — *see under* Bacterial Canker, apricots.

rootstocks — *see under* Rootstocks, apricot.

varieties—collections, trials, and classification — notes on, **1944,** II, 19; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1949,** II, 26; **1950,** II, 24; **1951,** II, 29.

Apterygida albipennis — *see under* Earwigs.

Arable land — acreage on Experimental Farm, **1952,** I, 15.

Arachis oil — used in Apple Scab storage experiments, **1941,** II, 26.

Aradid bugs — observations on, **1935,** III, 167.

Aradus aterrimus — *see under* Aradid bug.

Archips podana — *see under* Tortricid moths.

A.R.C. Scottish Raspberry Investigation — *see under* Raspberry Investigation, A.R.C., Scottish.

Argyresthia conjugella — *see under* Apple Fruit Moth.

,, *curvella* — *see under* Cherry Fruit Moth.

,, *nitidella* — *see under* Cherry Fruit Moth.

Argyroploce urticana — *see under* Tortricid moths.

Argyrotoza comariana — *see under* Strawberry Tortrix Moth.

Armillaria mellea — *see under* Armillaria Root Rot.

Armillaria Root Rot — notes on, **1924,** III, 115; **1933,** III, 144; **1941,** III, 40; **1942,** IV, 105. Attack on three-year-old Paxton strawberries, **1931,** III, 50. On black currants, **1935,** III, 143. On hops, **1939,** II, 35, III, 62; **1949,** IV, 179. On red currants, **1947,** II, 26.

Aromatic fractions — *see under* Ethyl acetate fraction.

Arsenate — *see under* Arsenic; Calcium arsenate; Lead arsenate; Spur Blight, raspberries.

Arsenic–

on fruit — *see under* Analysis, chemical, inorganic, arsenic; Spray residues.

soluble, release of — from metallic arsenates by dilute lime-sulphur solutions, **1938,** II, 83; **1939,** II, 32; **1942,** II, 26; **1948,** II, 46; **1951,** II, 47.

Arum lilies — *Pilobus* sp. on, **1926-27** (S), III, 87.

Ascochyta pisi — *see under* Pea Pod Spot.

,, sp. — *see under* Hops, leaf disease.

Atomaria linearis — *see under* Pygmy Mangold Beetle.

Atractotomus mali — predator of Fruit Tree Red Spider Mite, **1952,** III, 150.

Aulacaspis rosae — *see under* Scurfy (Rose) Scale.

Auxin — *see also under* Growth substances; Hormones.
The study of auxin in shoots of apple and plum, by E. S. J. Hatcher: auxin values influenced by external conditions, notably the

Auxin–*continued*

seasonal environment of the shoot, **1947,** III, 113. Auxin survey of fruit trees using shoots of apple and plum rootstocks, **1948,** II, 36. 'Storage auxin' not detectable by diffusion method, **1950,** II, 32. Effect of oxygen content as studied in stem sections of Crab C; under an anaerobic condition transport of auxin did not occur, but increased oxygen concentration increased transport rate, **1951,** II, 35. Tip, i.e. stem apex and all unexpanded buds, found to be main source of auxin, **1952,** II, 29.

Avena coleoptile technique — *see under* Coleoptile curvature technique.

Azobenzene — *see also under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.
use as ovicide, **1948,** II, 45, 46; **1949,** II, 45; **1950,** II, 31.

Azoxybenzene — use as ovicide, **1949,** II, 45; **1950,** II, 31; **1952,** II, 42.

Bacillus carotovorus — *see under* Soft Rot, turnips.

Bacterial Blight–

forsythia — *see under* Forsythia Bacterial Blight.

lilac — *see under* Lilac Bacterial Blight.

mulberries — *see under* Mulberry Bacterial Blight.

walnuts — *see under* Walnut Bacterial Blight.

Bacterial Blossom Blight–

cherries, Morello — notes on, **1941,** III, 41; **1950,** II, 38.

pears — notes on, **1928-29-30** (S), III, 131; **1933,** II, 51; **1936,** III, 192; **1937,** II, 76, III, 186; **1940,** II, 24; **1941,** III, 41. **Bacterial Blossom Blight of pear trees,** by H. Wormald and H. B. S. Montgomery, **1940,** III, 58. Results of 1940 confirmed, **1941,** II, 22. Apparently due to abnormally cold weather about blossoming time; associated with punctures of Apple Blossom Weevil, **1942,** II, 22. Apparently due to *Pseudomonas prunicola*, **1946,** II, 35.

Bacterial Canker–

almonds — notes on, **1936,** III, 192; **1938,** II, 76. **Two ornamental shrubs as hosts of the organism causing plum Bacterial Canker,** by H. Wormald: relates to presence of canker on almond (*Prunus amygdalus*) and purple-leafed plum (*Prunus pissardii*), **1937,** III, 198.

apricots — notes on, **1949,** II, 40; **1950,** II, 38; **1952,** II, 34; **1953,** IV, 205.

cherries — notes on, **1924,** II, 109, III, 113; **1925,** II, 63; **1926,** II, 59; **1927,** II, 54; **1928,** II, 99; **1929,** II, 70; **1930,** II, 89; **1933,** II, 47; **1934,** II, 60; **1935,** II, 36, 58; **1936,** II, 65; **1937,** II, 76, 86, III, 186; **1938,** II, 76, III, 171; **1939,** II, 28; **1940,** II, 23; **1941,** II, 22, III, 41; **1942,** II, 22, IV, 106; **1943,** II, 23; **1944,** II, 26; **1946,** II, 35; **1947,** II, 37; **1948,** II, 39; **1949,** II, 40, III, 120; **1950,** II, 38; **1951,** II, 40; **1952,** II, 34; **1953,** II, 37. 'Dieback' obtained by inoculation with bacteria isolated from stem cankers and from leaf spot, **1927,** II, 55. **Bacterial diseases of stone-fruit trees in Britain. I. Preliminary note on bacteriosis in plum and cherry trees,** by H. Wormald: general note on Gummosis, Leaf Spot, and Bacterial Canker (which is also called 'dieback') in cherry trees, **1926-27** (S), III, 121. Possible cause of rot in fruit, **1928-29-30** (S), III, 132. Organism causing leaf spot in acid cherries is different from that causing bacteriosis in plums and cherries in England, **1936,** II, 65. **Bacterial Canker in plum and cherry trees,** by H. Wormald, **1936,** IV, 297. Sprayed trees gave less cankers than unsprayed trees, but a satisfactory method of control not yet evolved, **1937,** II, 76. Organism found to be *Pseudomonas prunicola* and *P. mors-prun-*

Bacterial Canker–cherries–*continued*

orum, **1938,** II, 77. Notes on spray treatments, **1938,** II, 87. **Bacterial rot of cherry fruits,** by H. Wormald, **1938,** III, 173. Recent work on, **1938,** IV, 253. Controlled by spraying with Bordeaux mixture in autumn and spring, the leaf spot stage being controlled by foliage application of Bordeaux mixture with cotton seed oil, **1939,** II, 33. Attempts to control disease by incorporation of resistant stem-builders indicated that such resistance may break down in certain graft combinations with susceptible varieties, **1941,** II, 22. **Bacterial diseases of acid cherry trees,** by H. Wormald, **1942,** III, 61. **The comparative susceptibility of high- and low-worked cherry trees in the nursery to Bacterial Canker,** by N. H. Grubb: low-worked trees of Napoleon Bigarreau cherry in the nursery shown to have been significantly more injured by Bacterial Canker when 3 years old from bud than high-worked trees 1 year old from grafting, **1943,** III, 43. High-worked Napoleon Bigarreau sweet cherries proved less susceptible to Bacterial Canker than low-worked ones, and the Malling mazzard selection F 12/1 was more resistant than seedling mazzard from any one of four sources, **1944,** II, 17. Two sprayings of Bordeaux mixture gave good control on susceptible Bigarreau de Schrecken over 4 years, **1944,** II, 26. **Bacterial Canker and Leaf Spot of plum and cherry: a summary of present knowledge on control measures in Britain,** by M. H. Moore: use of copper-containing bactericide, e.g. Bordeaux mixture, offers most promise, as well as use of resistant framework, **1945,** IV, 134. Two selected mazzards obtained from N.W. Germany reputed to be highly resistant to Bacterial Canker, **1949,** II, 22. **Bacterial infection of fruiting spurs of sweet cherry (*Pseudomonas mors-prunorum* Wormald and *P. prunicola* Wormald),** by P. C. R. Webb: viable bacteria isolated from surfaces receiving Bordeaux spray three weeks previously, **1949,** III, 120. Fewer bacteria on leaf of resistant variety, **1950,** II, 38. Leaf scar important as avenue of infection, **1951,** II, 40. Relationship between time of inoculation and time of autumn spray important; in inoculation experiments much higher concentrations necessary to establish a given level of infection in a resistant than in a susceptible variety; saprophytic bacterium found co-existing with pathogen, **1952,** II, 34. Notes on leaf-scar infection, leaf-surface bacterial populations, and spray trials, **1953,** II, 37. **Bacterial Canker, Leaf Spot, and Shoot Wilt of cherry and plum,** by J. E. Crosse, **1953,** IV, 202.

general — notes on, **1939,** II, 32; **1948,** II, 39; **1949,** II, 40; **1950,** II, 38; **1951,** II, 40; **1952,** II, 34; **1953,** II, 37.

peaches — causal organism *Pseudomonas mors-prunorum*, **1942,** II, 22.

plums — notes on, **1924,** II, 109, III, 113; **1925,** II, 63; **1926,** II, 59; **1927,** II, 54; **1928,** II, 99; **1929,** II, 70; **1930,** II, 89; **1931,** II, 36; **1932,** II, 39; **1933,** II, 47; **1934,** II, 60; **1935,** II, 58; **1936,** II, 65; **1937,** II, 75, 86, III, 186; **1938,** II, 76, III, 171; **1939,** II, 28, IV, 83; **1940,** II, 23, 27, 28; **1941,** II, 22, 26; **1942,** II, 22, IV, 106; **1946,** II, 35; **1949,** II, 38; **1950,** IV, 193. **The incidence of 'Dieback' disease in plum trees,** by J. Amos, R. G. Hatton, and Alexandrina D. Mackenzie: whilst attack takes place more or less indiscriminately upon any root-stock, the susceptibility of scion varieties is markedly different, **1925** (S), III, 33. Influence of rootstock, **1926,** II, 58. 'Dieback' obtained by inoculation with bacteria isolated from stem cankers and from leaf spot, **1927,** II, 54. **Bacterial diseases of stone-fruit trees in Britain. I. Preliminary note on bacteriosis in plum and cherry trees,** by H. Wormald: a general note on Shoot Wilt of

Bacterial Canker–plums–*continued*

plums, and Bacterial Canker in plum trees, which is also called 'Dieback', **1926-27** (S), III, 121. **Bacterial Canker of plum trees,** by H. Wormald, **1931,** IV, 70. **Bacterial diseases of stone fruit trees in Britain. V. Some field observations and experiments on plum Bacterial Canker,** by H. Wormald: pruning and cutting back plum trees in autumn should be avoided as Bacterial Canker infection may arise at cut surfaces, **1933,** III, 147. Variety Victoria, when worked high on Myrobolan B or Common Plum, had lower percentage of trees killed than when worked low, **1934,** II, 60. **Preliminary laboratory tests of bactericides on the plum bacterial canker organism,** by H. Wormald: organism very sensitive to low concentrations of formaldehyde, chinosol, and mercuric chloride, **1934,** III, 151. Trees in sand culture and inoculated with *Pseudomonas mors-prunorum* became severely cankered except where phosphate was omitted, **1935,** II, 58. **Bacterial Canker of plum trees in relation to nutrition. Experimental results in sand cultures,** by F. H. Beard and H. Wormald, with an appendix by W. A. Roach: largest cankers develop in quadruple phosphate and the complete nutrient series, and the smallest in the low phosphate series, **1935,** III, 146. Largest cankers on trees which received excess phosphate and smallest on those to which no phosphate was added, but results probably correlated with availability of iron, **1936,** II, 65. First record of disease on Victoria plums in Northern Ireland, **1936,** III, 191. Found on purple-leafed plum (*Prunus pissardii*), **1936,** III, 192. **Bacterial Canker in plum and cherry trees,** by H. Wormald, **1936,** IV, 297. **Manurial trial on nursery trees with reference to effect on plum Bacterial Canker,** by H. Wormald and R. J. Garner: no significant differences found, but suggestion that lime tends to induce susceptibility, **1937,** III, 194. **Two ornamental shrubs as hosts of the organism causing plum Bacterial Canker,** by H. Wormald: relates to presence of canker on almond (*Prunus amygdalus*) and purple-leafed plum (*Prunus pissardii*), **1937,** III, 198. Recent work on, **1938,** IV, 253. Controlled by spraying with Bordeaux mixture in autumn and spring, the leaf-spot stage being controlled by foliage application of Bordeaux mixture with cotton seed oil, **1939,** II, 33. Can be satisfactorily controlled by use of trees with resistant stems; Purple Pershore and Myrobolan B are the most successful, **1940,** II, 23. Results of artificially inoculating plum trees showed that stems of Pershore, Denniston's Gage, and Victoria are highly susceptible, stems of President, Utility, Warwickshire Drooper, and Purple Egg were intermediate, and stems of Myrobolan B rarely developed cankers at all, **1940,** II, 24. Attempts to control disease by incorporation of 'resistant' stem-builders indicated that such resistance may break down in certain graft combinations with susceptible varieties, **1941,** II, 22. Bark extracts prepared by Professor Harrington and Mrs. Pitt-Rivers against *Pseudomonas mors-prunorum* showed no differential effect correlated with origin from resistant or susceptible plum varieties, **1942,** II, 22. **A field trial of measures designed for the control of Bacterial Canker of Victoria plum trees,** by H. B. S. Montgomery, M. H. Moore, and T. N. Hoblyn: the use of resistant varieties to form the stem and crotch of trees upon which to graft susceptible Victoria was highly successful in preventing the occurrence of stem cankers, **1942,** III, 53. Working of stems and crotches of certain plum varieties resistant to this disease with the susceptible Victoria ('stem-building') was highly successful in avoiding stem cankers; spraying foliage with Bordeaux mixture, particularly three weeks after petal-fall and later, controlled leaf 'shot hole' stage of disease

Bacterial Canker–plums–*continued*

and reduced number of branch, but not stem, cankers, **1943,** II, 23. **Bacterial Canker and Leaf Spot of plum and cherry: a summary of present knowledge on control measures in Britain,** by M. H. Moore: use of copper-containing bactericide, e.g. Bordeaux mixture, offers most promise, as well as use of resistant framework, **1945,** IV, 134. **Bacterial Canker, Leaf Spot, and Shoot Wilt of cherry and plum,** by J. E. Crosse, **1953,** IV, 202.

Bacterial rot–

cherries — *see under* Bacterial Canker, cherries.

turnips — *see under* Soft Rot, turnips.

Bacterial Shoot Wilt — *see under* Bacterial Canker, apricots; Bacterial Canker, cherries; Bacterial Canker, plums.

Bactericides — notes on, **1941,** II, 25; **1942,** II, 26. Degree of toxicity of a large number of alkalis and acids depends on the hydrogen-ion concentration of the solution rather than on a specific toxicity of the substances, **1940,** II, 27. **Preliminary laboratory tests on bactericides on the plum bacterial canker organism,** by H. Wormald, **1934,** III, 151.

Bacteriosis–

apricots — *see under* Bacterial Canker, apricots.

cherries — *see under* Bacterial Canker, cherries.

lilac — *see under* Lilac Bacterial Blight.

plums — *see under* Bacterial Canker, plums.

Bacterium campestre — *see under* Black Rot, crucifers.

,, *mori* — *see under* Mulberry Bacterial Blight.

,, *phaseoli* — *see under* Leaf Spot, French beans.

,, saprophytic — found co-existing with pathogen in Bacterial Canker of cherry, **1952,** II, 34.

,, *tumefaciens* — *see under* Crown Gall; Galls.

Bait traps — *see under* Codling Moth.

Balaninus nucum — *see under* Nut Weevil.

Banding — *see under* Tree banding.

Barium silicofluoride — *see under* Apple Blossom Weevil; Tortricid moths.

Bark Blister — *see under* Branch Blister.

,, Split, plums — symptoms of; especially severe on Ontario and Cambridge Gage, **1952,** IV, 183.

Bark-wood relationship — *see under* Histological investigations.

Barley — *see under* Corn crops and trials.

Barypithes araneiformis — *see under* Strawberry Fruit Weevil.

,, *pellucidus* — *see under* Weevils.

Batodes sp. — *see under* Tortricid moths.

Batophila aerata — *see under* Raspberry Flea beetles.

,, *rubi* — *see under* Raspberry Flea beetles.

Baumforth's Disease — *see under* Leaf Curl, raspberries.

Bean Aphid (see also Black Bean Aphid) — 'Guesarol' failed to control, whereas nicotine was completely successful; due to unsatisfactory wetting power of 'Guesarol', **1943,** II, 27.

,, Scab — caused by *Colletotrichum lindemuthianum*, **1926-27 (S),** III, 85.

,, Weevil, Pea and — *see under* Pea and Bean Weevil.

Bedford Giant blackberry — *see under* Blackberries.

Bees, honey — *see under* Apple blossoming.

Beetle Mite — observations on, **1924,** III, 165; **1928-29-30** (S), III, 189; **1952,** III, 149.

Beetles — *see also under* common names of beetles (for full list of names appearing in Index see pages 158-168); Beneficial insects and mites; Flea beetles; Ground beetles; Longhorned beetles; Strawberry Ground beetles.

- chafer — observation on *Gnorimus nobilis* L., **1939,** III, 70.
- dung — observation on *Aphodius fimetarius* L., **1938,** III, 181.
- general — observation on *Dorcus parallelopipedus* L., a wood-boring beetle found in apple fruitlet, **1936,** III, 224. Observation on *Sinodendron cylindricum*, a Lamellicorn beetle, **1937,** III, 203. Observation on *Librodor hortensis*, **1937,** III, 204. Observations on *Mordella fasciata* and *Rhinosimus planirostris*, heteromerus beetles on plums, **1944,** III, 78, 79. *Rhynchites minutus* not observed feeding on strawberries, **1945,** III, 91. Observation on *Phyllobius artemisiae*, a beetle reported on rosaceous plants in Kent, **1948,** III, 102. Observation on *Prionychus ater*, **1948,** III, 103.

Beetroot–

- Leaf Spot — *see under* Leaf Spot, beetroots.
- rot — due to *Phoma betae*, **1933,** III, 146.

Beneficial insects and mites–

- general — *see also under* Insect fauna.
  Raspberry Beetle and Pygmy Mangold Beetle, pests of raspberry and mangold but beneficial on apple and other fruit, **1936,** III, 223. Effect of DDT and other insecticides upon beneficial insects associated with fruit, **1945,** II, 36; **1947,** II, 40; **1948,** II, 42. Beneficial beetles killed by DDT, **1946,** III, 126.
- parasites–
  - general — observations on parasite of Strawberry Moth larvae, **1943,** III, 59. Directions for capture of parasites of Apple Blossom Weevil, **1943,** III, 61. **Studies in population fluctuations of the Strawberry Aphid, *Pentatrichopus fragaefolii* (Cock.). I. Enemies of the Strawberry Aphid,** by G. H. L. Dicker, **1951,** III, 166. Studies of parasites of Codling Moth, **1952,** II, 40.
  - Woolly Aphid Parasite — *see under* Woolly Aphid Parasite.
- pollinators — *Meligethes aeneus*, *Atomaria linearis*, *Micrambe vini*, *Corticaria elongata*, *Anaspis humeralis*, *Corticarina gibbosa*, *Enicmus transversus*, and *Byturus tomentosus*, beneficial beetles, **1936,** III, 223.
- predators–
  - Fruit Tree Red Spider Mite — *see also under* Dustywings.
    observations on, **1935,** III, 167; **1944,** II, 28; **1945,** II, 36; **1946,** II, 38; **1947,** II, 40, III, 139; **1948,** II, 42, 47, III, 102; **1949,** II, 43; **1950,** II, 42; **1951,** II, 43; **1952,** II, 40, 44, III, 150; **1953,** II, 44. Minute Lacewing predacious on winter eggs of Fruit Tree Red Spider Mite, but destroyed by routine application of tar oil and petroleum sprays, **1948,** III, 107. **The predator aspect of the Fruit Tree Red Spider problem,** by Elsie Collyer: tar oil, petroleum, and DNOC sprays have little effect on Black-kneed Capsid, but summer sprays of derris, nicotine, and azobenzene are toxic to nymphs of Black-kneed Capsid, and lime-sulphur causes a considerable reduction in population; DDT has toxic effect on all predators, **1948,** III, 108. Catalogue of world literature of Fruit Tree Red

Beneficial insects and mites–predators–Fruit Tree Red Spider Mite–*continued*

Spider Mite and its predators, **1949,** II, 43. Observations on *Typhlodromus* (*Iphidulus*) *finlandicus*, *T.* (*I.*) *tiliae*, *Neoseiulus macrophilus*=*Typhlodromus spoofi*, *Anystis agilis*, mites predacious on fruit trees, **1949,** III, 130. Effect on dispersal of Fruit Tree Red Spider Mite, **1950,** III, 158. In 1951 scarce in Essex, but more in Kent, **1951,** II, 43. Preliminary experiments indicate that glyoxalidine fungicides are harmless to, **1951,** II, 48. Use of aldrin and fungicide J49 to study action of fungicide upon certain mite predators, **1952,** II, 44. **The effect of spraying materials on some predatory insects,** by Elsie Collyer: effect of lime-sulphur, nicotine, derris, DDT, BHC, parathion, and winter washes on *Anthocoris nemorum*, *Orius majusculus*, *Oligota flavicornis* (Rove Beetle), and *Blepharidopterus angulatus* (Black-kneed Capsid), *Conwentzia pineticola*, *Stethorus punctillum*, and *Coccinella septempunctata*, **1952,** III, 141. Black-kneed Capsid, Anthocorids, *Orius* spp., *Atractotomus mali*, *Psallus ambiguus*, *Himacerus lativentris*, and *Stethorus punctillum* as predators, **1952,** III, 150. **Some predacious insects of commercial orchards,** by Elsie Collyer: describes Black-kneed Capsid, Anthocorid bugs, *Stethorus punctillum*, and Coniopterygid Lacewing, **1953,** IV, 218.

general — *Scymnus punctillum*, a beetle larvae feeding on Hop-Damson Aphid, **1939,** III, 70. *Tachyporus obtusus* and *T. hypnorum*, beetle predators of Strawberry Aphid, **1944,** II, 28. Hemipteron, predacious bug on apples and plums, **1944,** III, 81. Ladybird beetles, predators on aphids, **1946,** III, 125. Ant Beetle larvae predacious on Large Fruit Bark Beetle and Fruit Bark Beetle, **1947,** III, 135. *Typhlodromus* (*Iphidulus*) *finlandicus*, *T.* (*I.*) *tiliae*, *Neoseiulus macrophilus*=*Typhlodromus spoofi*, *Anystis agilis*, mites predacious on fruit trees, **1949,** III, 130. **Studies in population fluctuations of the Strawberry Aphid, *Pentatrichopus fragaefolii* (Cock.). I. Enemies of the Strawberry Aphid,** by G. H. L. Dicker, **1951,** III, 166.

Benzene hexachloride (BHC) — *see under* Apple Blossom Weevil; Apple Sawfly; Beneficial insects and mites; Fruit Tree Red Spider Mite; Ovicides; Pear Sawfly; Pear Sucker; Raspberry Cane Midge; Strawberry Blossom Weevil; Strawberry Mite; Woolly Aphid.

Benzyl alcohol — *see under* Ovicides.

Benzyl benzoate — an acaricide, **1952,** II, 43.

Berries, hybrid — *see under* Hybrid berries.

Berry, Phenomenal — *see under* Phenomenal Berry.

BHC — *see under* Benzene hexachloride.

Bibio hortulanus — *see under* St. Mark's Fly.

Biennial bearing — notes on, **1931,** II, 24; **1932,** II, 26; **1934,** II, 37; **1935,** II, 33; **1936,** II, 36; **1937,** II, 68; **1938,** II, 44; **1941,** II, 15; **1944,** II, 19; **1945,** II, 19; **1946,** II, 19; **1947,** II, 23, 24; **1948,** II, 26; **1953,** II, 26. **The injection of individual branches of a tree which has not been spur-pruned: a progress report,** by P. K. Sen, **1936,** III, 171. 'On' year spur-shortening did slightly increase fruit bud differentiation, but not nearly enough to overcome the biennial habit, **1937,** II, 44. Notes on relation to tree morphology and attempted control measures, **1938,** II, 68. Severe spur-shortening in the winter following a heavy crop may bring strongly biennial trees nearer to regular cropping, **1939,** II, 20. Injection of branches of 'on' and 'off' trees with solution of nitrogen, phosphate, and potash, alone and in combination, did not affect biennial performance, **1947,** II, 24.

Biennial bearing–*continued*

A test of nitrogen, phosphorus and potassium injections in biennial bearing apple trees, by L. B. Singh: did not affect subsequent biennial bearing, **1947,** III, 82. Successful control in Miller's Seedling achieved by removal of about 85% of fruit buds during dormant season, or by removal of the same percentage of blossom clusters at pink-bud stage; defoliation trials indicate that very severe defoliation is necessary to produce an effect on the crop; use of bud rubbing and blossom thinning, **1949,** II, 24. Use of sodium dinitro-orthocresylate as a defoliant spray, **1949,** II, 25. **Towards the control of biennial bearing,** by Moya H. E. Davies, **1949,** IV, 154. Five different defoliants applied to branches of Laxton's Superb, Miller's Seedling, and Bramley's Seedling; differential responses of the three varieties recorded, **1950,** II, 23. The 'on' year figure was considerably greater in nitrogen in the leaf than in the 'off' year; difference in manganese content much more pronounced from July onwards, **1950,** II, 36. Effect of tree shape and pruning on, **1951,** II, 28. Control on Bramley's Seedling by defoliating sprays in 'off' year, **1952,** II, 23. Change in leaf composition in 'off' year, not in 'on' year, trees early in June, **1952,** II, 32.

Big Bud Mite — *see under* Black Currant Gall Mite.

Bindweed — *see under* Weedkillers.

Biochemistry Section — general review of research work, **1930,** II, 83; **1931,** II, 34; **1932,** II, 38; **1933,** II, 45; **1934,** II, 57; **1935,** II, 55; **1936,** II, 61; **1937,** II, 71; **1938,** II, 72; **1939,** II, 27; **1940,** II, 22; **1941,** II, 21; **1942,** II, 21; **1943,** II, 22; **1944,** II, 24; **1945,** II, 29; **1946,** II, 32; **1947,** II, 34; **1948,** II, 37; **1949,** II, 36; **1950,** II, 34; **1951,** II, 37; **1952,** II, 31; **1953,** II, 34.

Biometrics — *see under* Statistical studies.

Bird damage — use of alum as deterrent, **1951,** III, 160.

Bitter Pit — *see under* Functional disorders, Bitter Pit.

Bitter Rot — due to *Gloeosporium* spp., **1949,** IV, 172.

Black Bean Aphid — *see also under* Bean Aphid.
The apple, pear, and quince aphids, by G. H. L. Dicker, **1953,** IV, 213.

Blackberry (ies)– — (includes Bedford Giant, Himalaya, and Parsley-leaved).

beetle — *see under* Raspberry Beetle.

Blue Blotch disease — *see under* Purple Blotch, blackberries.

Brown Rot — *see under* Brown Rot, blackberries.

cane spot — *see under* Septoria Spot, blackberries.

cropping — *see under* Blackberries, Experimental Farm.

Crown Gall — *see under* Crown Gall, blackberries.

dieback — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.

diseases — *see also under* common names of diseases (for full list of diseases appearing in Index see pages 169-175); Blackberries, growing of, general.
Notes on diseases of the raspberry, loganberry, and blackberry in 1928-30, by R. V. Harris, **1928-29-30** (S), III, 133.

Dwarf — *see under* Rubus Stunt.

Experimental Farm — acreage, cropping, and general notes, **1937,** I, 20; **1938,** I, 24; **1939,** I, 16; **1940,** I, 12; **1941,** I, 11; **1942,** I, 11.

frost damage — *see under* Frost damage investigations, blackberries.

Blackberry (ies)–*continued*

gall mite — on Himalaya Berry, **1925** (S), III, 154.

growing of, general — *see also under* Blackberries, varieties.
A note on the training of loganberries and blackberries, by A. Beryl Beakbane, **1933,** IV, 247.

Leaf Miner Sawfly — *see under* Raspberry Leaf-mining Sawfly.

Mite — *see under* Blackberries, Red Berry Disease.

Mosaic — cane inarching used in transmission and symptom analysis of Mosaic disease of Bedford Giant blackberry, a distinct disease from Raspberry Mosaic, **1939,** II, 29.

propagation — *see under* Blackberries, growing of; Propagation, blackberries.

Purple Blotch — *see under* Purple Blotch, blackberries.

Red Berry Disease — notes on, **1932,** II, 46. Said to be caused by a mite called *Eriophyes essigi* Hassan, **1931,** II, 43; **1937,** II, 101. Less prevalent after a tar wash, **1938,** II, 100.

Reversion — *see under* Rubus Stunt.

Rust — notes on, **1928-29-30** (S), III, 139; **1931,** III, 50. Infection by *Phragmidium violaceum*, **1933,** III, 146.

Septoria disease — *see under* Septoria Spot, blackberries.

sterilizing — use of propylene oxide, **1952,** III, 136.

training — *see under* Blackberries, growing of.

varieties–

collections, trials, and classification — notes on, **1932,** II, 33; **1935,** II, 79; **1936,** II, 85; **1937,** II, 100; **1938,** II, 98; **1941,** II, 16; **1948,** II, 29. **Cultivated blackberries, dewberries, and hybrid berries—a progress report,** by A. Beryl Beakbane, **1932,** III, 68. **Trials of loganberries, blackberries, and hybrid berries,** by A. Beryl Beakbane, **1938,** IV, 213. **Some practical points in the growing of loganberries and blackberries,** by A. Beryl Beakbane and N. B. Bagenal, **1940,** IV, 89.

virus diseases — *see also under* Blackberry Mosaic; Rubus Stunt.

diagnosis by cane inarching — *see under* Rubi, virus diseases.

vectors — *see under* Rubi, virus diseases, vectors; Rubus Stunt.

Black Blotch, raspberries — notes on, **1928-29-30** (S), III, 136.

Black-bodied Sawfly — *see under* Small Gooseberry Sawfly.

Black currant(s)–

Amos Black — *see under* Black currants, varieties, Amos Black.

aphids — *see also under* Currant-Lettuce Aphid.
Studies on, **1952,** II, 40.

Armillaria Root Rot — attack on, **1935,** III, 143.

Big Bud Mite — *see under* Black Currant Gall Mite.

blossoming — *see under* Blossoming, general.

breeding — *see under* Breeding, soft fruits, black currants.

certification schemes — *see under* Certification schemes.

Clay-coloured Weevil — damage by, **1924,** III, 165.

colchicine, use on seedlings — notes on, **1949,** II, 28; **1950,** II, 25; **1951,** II, 30; **1952,** II, 25.

cropping — *see under* Black currants, Experimental Farm; Black currants, varieties.

Black currant(s)–*continued*

cultural measures — notes on, **1943,** II, 18; **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 27; **1948,** II, 30; **1949,** II, 29; **1950,** II, 26; **1951,** II, 30; **1952,** II, 26.

cuttings — *see under* Propagation, black currants.

dieback — caused by *Cytosporina ribis*, said to be imperfect stage of *Eutypa lata* var. *ribis*, **1941,** III, 41.

diseases, general — *see also under* common names of diseases (for full list of names appearing in Index see pages 169-175).
notes on, **1924,** III, 116.

Eelworm — *see under* Leaf and Bud eelworms, on black currants.

Experimental Farm — acreage, cropping, and general notes, **1922,** 17; **1924,** I, 29; **1925,** I, 31; **1926,** I, 29; **1927,** I, 31; **1928,** I, 27; **1929,** I, 25; **1930,** I, 32; **1931,** I, 14; **1932,** I, 15; **1933,** I, 17; **1934,** I, 22; **1935,** I, 20; **1936,** I, 17; **1937,** I, 20; **1938,** I, 23; **1939,** I, 15; **1940,** I, 12; **1941,** I, 11; **1942,** I, 11; **1943,** I, 12; **1944,** I, 13; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 18; **1949,** I, 16; **1950,** I, 16; **1951,** I, 18; **1952,** I, 15, 16; **1953,** I, 18.

frost damage — *see under* Frost damage investigations, black currants.

Gall Mite — *see also under* Black Currant Reversion.
observations on, **1923,** II, 94; **1924,** II, 139; **1931,** II, 42. **The control of Big Bud Mite (*Eriophyes ribis* Nal.) in the field,** by H. M. Tydeman: severity of attack reduced by lime-sulphur in early spring, **1923,** III, 125. **The control of Big Bud Mite in the field,** by R. G. Hatton, J. Amos, and H. M. Tydeman: recommend spray black currant bushes with winter strength lime-sulphur wash just as blossom trusses are appearing, but before they open, **1924,** III, 158. Effective control of Big Bud obtained by lime-sulphur just before the first blossoms open, **1925,** II, 74. **The control of the Black Currant Gall Mite (*Eriophyes ribis* Nalepa),** by A. M. Massee: most effective measure is to spray currant bushes in the spring with lime-sulphur when the flower racemes appear, but before the flowers open, **1925,** IV, 76. **Observations on the presence of mites (*Eriophyes ribis*) upon black currant bushes manifesting Reversion and Big-bud,** by A. M. Massee: caution necessary in drawing conclusions based on presence or absence of mites as manifested by big buds, **1925** (S), III, 151. Observations have shown (*a*) that a mite population may be present on badly reverted bushes without manifesting big bud, (*b*) that the mite is sometimes found in apparently normal buds, (*c*) that on the Goliath group of currants apparently big buds are frequently found apart from *Eriophyes ribis,* **1927,** II, 68. **The Black Currant Gall Mite on red currants,** by A. M. Massee, **1926-27** (S), III, 151. New gall mite on black currant, **1928,** II, 110. Occurrence on red currants becoming serious, **1928,** II, 111. **The Black Currant Gall Mite on red currants,** by A. M. Massee: suggested method of control by spraying with lime-sulphur in the spring, **1928,** IV, 123. Mite on red currants can be checked by sulphur spray, provided spray applied at correct season and varieties not injured by spray, **1930,** II, 102. Derris and soap caused no injury as post-blossom spray, but was less effective than a post-blossom application of 2% lime-sulphur, **1939,** II, 33.

Gooseberry Mildew, American — attacked by, **1925** (S), III, 82.

growing of, general — **How to improve black currant plantations,** by J. Amos, R. G. Hatton, and T. N. Hoblyn: discusses varieties, climatic conditions,

Black currant(s)–growing of, general–*continued*

manurial and cultural treatments, pests and diseases, and renovation of existing plantations, **1941,** IV, 53.

Leaf-curling Aphid — *see under* Currant-Lettuce Aphid.

,, ,, Midge — *see under* Black Currant Leaf Midge.

Leaf Midge — observations on, **1928-29-30** (S), III, 197; **1937,** III, 208; **1940,** III, 62; **1944,** II, 29; **1945,** II, 38; **1947,** II, 41; **1948,** II, 43; **1949,** II, 29, 44. **The Black Currant Leaf Midge, *Dasyneura tetensi* (Rübs.),** by R. M. Greenslade: its description and attempts to control, **1940,** III, 66. Three applications of 0·01% parathion gave good control, **1949,** I, 19. Effect of parathion on, **1950,** II, 43. Field trial comparing parathion and DDT for control of, **1951,** II, 44; **1952,** II, 41.

Leaf Spot — *see under* Leaf Spot, currants.

manuring — *see under* Manuring, black currants.

phytotoxicity trials — notes on, **1952,** II, 44.

propagation — *see under* Propagation, black currants.

pruning — *see under* Pruning, black currants.

Reversion — *see also under* Black Currant Gall Mite.
notes on, **1915-16,** 5; **1916-17,** 6; **1924,** II, 141; **1951,** III, 160. Double roguing of parent bushes, first when they are coming into blossom and again when they are making their main leaf growth in July, well worth while, but neither method by itself completely efficient; final precaution is roguing of the nursery bed by leaf characters, **1923,** II, 95. Lime-sulphur spray, which controls Bud Mite, was found to be controlling the spread of Reversion, which points to Big Bud Mite being transmitter, **1925,** II, 75. **Observations on the water conductivity of the stems of reverted black currants,** by R. C. Knight: apparently no difference in the water conductivity of normal and reverted stems, **1925** (S), III, 70. **Observations on the presence of mites (*Eriophyes ribis*) upon black currant bushes manifesting Reversion and Big-bud,** by A. M. Massee, **1925** (S), III, 151. **'Reversion' in black currants. Its causes and eradication,** by J. Amos, R. G. Hatton, R. C. Knight, and A. M. Massee: transmitted by Big Bud Mite, **1927,** IV, 43. Reversion prevalent in orchards where Black Currant Gall Mite absent, **1939,** II, 31. Black Currant Gall Mite a vector of Reversion, **1944,** II, 29. Experiments to determine host range of, **1945,** II, 33. **Transmission of Reversion of black currants,** by A. M. Massee: carried by Black Currant Gall Mite; other insects tried were Currant Capsid Bug, Red Currant Blister Aphid, Lettuce Aphid, Gooseberry Aphid, and Currant-Lettuce Aphid, **1951,** III, 162.

'running off' — notes on, **1922,** 33. 'Running off' apparently a question of pollination and relationship between length of style and stamens, **1915,** 6. Much 'running off' in 1949, **1949,** II, 29. Due to incomplete pollination, **1952,** III, 67.

Rust — *see under* Currant Rust.

Sawfly — observations on, **1953,** III, 165.

Septoria Leaf Spot — *see under* Leaf Spot, currants, Septoria.

spray damage — *see under* Spray damage.

straw mulching — *see under* Mulching, straw.

varieties–

Amos Black — notes on, **1949,** II, 28; **1950,** I, 20, II, 25; **1951,** I, 21. **Amos Black: a promising new black currant variety,** by H. M. Tydeman: ripens at least a fortnight after Baldwin, **1948,** III, 82.

Black currant(s)–varieties–*continued*

breeding — *see under* Breeding, soft fruits, black currants.

collections, trials and classification — notes on, **1913-14,** 2; **1914-15,** 5; **1915-16,** 4; **1916-17,** 6; **1917-18,** 5; **1918-19,** 13; **1919-20,** 5; **1920-21,** 7; **1922,** 32; **1923,** II, 88; **1924,** II, 39; **1925,** II, 39; **1926,** II, 37; **1928,** II, 38; **1929,** II, 37; **1930,** II, 44; **1933,** II, 38; **1934,** II, 42; **1935,** II, 41; **1936,** II, 47; **1937,** II, 56; **1938,** II, 54; **1944,** II, 20; **1952,** II, 25. **Black currant variety trials: reliability of results. The variability in cropping of individual black currant bushes as a guide to the suitable size of experimental plots,** by R. G. Hatton, N. H. Grubb, and R. C. Knight, **1924,** III, 54. **Some new and old varieties of black currant,** by R. G. Hatton and J. Amos, **1926,** IV, 39. **Three 'rogue' varieties of black currants,** by J. Amos: abridged version of following, **1930,** IV, 55. **Some 'rogue' varieties of black currants,** by J. Amos: detailed description given, together with that of Baldwin, as an aid to identification, **1928-29-30** (S), III, 46.

Vein-pattern — **New virus diseases of *Ribes*,** by A. F. Posnette, **1951,** III, 133. A gooseberry vein-banding virus probably not same as that causing Vein-pattern of black currants, **1952,** II, 37.

virus diseases — *see also under* Black Currant Reversion; Black Currant Vein-pattern; Black Currant Yellows.
Two new virus diseases studied, **1950,** II, 39.

Yellows — notes on, **1952,** II, 37; **1953,** II, 40. **New virus diseases of *Ribes*,** by A. F. Posnette, **1951,** III, 133.

Black-kneed Capsid — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Black Root Rot–

hops — notes on, **1949,** IV, 179. Reported from New Zealand and now found on hops in Great Britain; probably due to *Phytophthora* sp., **1942,** II, 29. **A *Phytophthora* disease of the hop in Great Britain,** by W. G. Keyworth, **1942,** III, 62. Further inoculation experiments showed pathogenicity of *Phytophthora* sp. isolated from C9a hops, **1943,** II, 28. Cause of disease established, **1944,** II, 31. First record of disease causing damage in Mathon variety, **1947,** II, 47.

raspberries — notes on, **1928-29-30** (S), III, 137; **1935,** IV, 233.

strawberries — notes on, **1933,** II, 49, III, 146; **1948,** II, 39; **1949,** II, 40; **1951,** II, 44. **Strawberry root rot,** by G. H. Berkeley, **1933,** III, 154. Notes on, including names of various fungi causing root rot in strawberries, **1934,** II, 64; **1936,** II, 66. Normal browning often has appearance of lesions and this accounts for fungi, not necessarily parasites, being isolated from brown cortex of normal roots, **1935,** II, 77. Possibility of Meadow Nematode playing a part in strawberry Black Root Rot, **1950,** II, 43.

Black Rot–

apples — **Black Rot and Leaf Spot of apple due to *Physalospora obtusa* (Schw.) Cooke,** by J. E. Crosse and Margery Bennett, **1950,** III, 137.

carrots — caused by *Alternaria radicina*, **1942,** II, 23.

crucifers — notes on, **1925,** II, 63; **1925** (S), III, 86. **Note on 'Black Rot' of cruciferous plants,** by H. Wormald and A. M. Frampton: due to *Bacterium campestre*, **1926-27** (S), III, 108.

Black Weevil — observations on, **1928-29-30** (S), III, 195.

Blastocollin — possible source of in apple juice, **1952,** II, 24.

Blastodacna atra — *see under* Pith Moth.

Blepharidopterus angulatus — *see under* Black-kneed Capsid.

Blister Beetle — observations on, **1936,** III, 224; **1941,** III, 49.

Blister Canker — *see under* Branch Blister.

'Blistered' bark — *see under* Branch Blister.

Blood — use on apples in pot cultural trials, **1952,** I, 19.

Blossom(s)–

- Blight — *see under* Bacterial Blossom Blight.
- capped — *see under* Apple Blossom Weevil.
- pears, non-setting — *see under* Pears, blossom, non-setting.
- thinning — use of to control biennial bearing, **1949,** II, 24. Various experiments on, **1949,** II, 34. Various compounds tested by spraying, **1950,** II, 31. Blossom thinning properties of NAA spray not due to direct effect on fertilization, **1951,** II, 35. Miller's Seedling and Laxton's Superb sprayed with sodium salt of DNC at 0·5% at full bloom, and with NAA at 40 p.p.m. 14 days after petal-fall, but the former was too drastic and the latter failed to thin the fruitlets, **1952,** II, 24.
- truss pose of apple — data collected on relation to cooling, **1949,** II, 25.
- Weevil, Apple — *see under* Apple Blossom Weevil.
- ,, Strawberry — *see under* Strawberry Blossom Weevil.
- Wilt — *see under* Brown Rot.

Blossoming–

- delaying — using maleic hydrazide spray some delay noted in raspberries, while check to growth noticed in apples, **1951,** II, 28. Apple trees sprayed with maleic hydrazide in 1951 showed no difference from controls in their time of flowering, **1952,** II, 24.
- forecasting — *see under* Apples, blossoming.
- general — *see also under* Apples, blossoming; Temperatures, air. **Some factors influencing the period of blossoming of apples and plums,** by R. G. Hatton and N. H. Grubb, **1924,** III, 81. **Periods of blossoming of some tree and soft fruit varieties at East Malling,** by A. Beryl Beakbane, H. C. Chapelow, and N. H. Grubb: average date of blossoming for some varieties of apples, pears, plums, cherries, and strawberries, **1934,** III, 100.

Blotchy Pit — *see under* Functional disorders, Blotchy Pit.

Blue Blotch — *see under* Purple Blotch, blackberries.

.. Bug — *see under* Rosy Apple Aphid.

.. Mould — a storage rot on apples, **1949,** IV, 172.

,, Stripe Wilt — notes on, **1924,** II, 108, III, 116; **1925 (S),** III, 81; **1926,** II, 58; **1926-27 (S),** III, 128; **1930,** IV, 95; **1928-29-30 (S),** III, 133; **1933,** III, 145; **1935,** IV, 232. **The Blue Stripe Wilt of the raspberry,** by R. V. Harris: description of disease and temporary control measures indicated, **1924,** III, 126. **Three raspberry diseases,** by R. V. Harris: includes account of Blue Stripe Wilt, **1925,** IV, 64. Notes on; due to *Verticillium dahliae*, **1927,** II, 53. Evidence that degree of parasitism can be modified by changing the environment, **1929,** II, 68.

Boarmia roboraria — *see under* Great Oak Beauty Moth.

Booklouse — notes on, **1931,** III, 52.

Bordeaux mixture — *see also under* Apple Mildew; Apple Scab; Bacterial Canker; Brown Rot, cherries, Morello; Cane Spot; Leaf Blight, celery; Leaf Blight, quinces; Leaf Spot, gooseberries; Pear Scab; Potato Blight; Rust, plums; Spray damage; Spraying, general; Spur Blight, raspberries; Walnut Bacterial Blight.

Bordeaux mixture–*continued*

On a new method for precision testing in the laboratory of the toxicity of lime-sulphur and of Bordeaux mixture as protective fungicides: a progress report, by H. B. S. Montgomery and M. H. Moore: describes method of standardizing application of sprays and fluids, and methods of raising supplies of scab spores (conidia) and standardizing the application of the spores, **1934,** III, 217. Use with NAA spray, **1941,** II, 20.

Bordeaux mixture—wetter damage — *see under* Spray damage.

Boron — *see also under* Analysis, chemical, inorganic, boron.
used as test for Bitter Pit, **1936,** III, 183. Trees injected with boric acid in 1936 gave first clear suggestion of boron deficiency troubles, **1937,** II, 72. **Abnormal ripening of cherries,** by S. G. Thompson: due to boron deficiency, **1943,** III, 51. **Suspected boron deficiency in apples in Britain,** by B. F. G. Levy: suggestion that mild boron deficiency may occur in British apple trees, **1946,** III, 95. Determination of in plants, **1950,** II, 34.

Botrytis allii — test fungus for fungicides, **1949,** II, 45.

,, *cinerea* — *see under* Grey Mould; Stalk-End Rot.

,, *elliptica* — found associated with wilting in lilies, **1932,** III, 82.

Botrytis Rot — *see under* Grey Mould.

Botrytis sp. — on walnuts, **1932,** II, 43. A rot of stored fruits, **1949,** IV, 172.

Boysenberry — *see also under* Hybrid berries; Mineral deficiencies (**1944,** III, 70). notes on, **1938,** IV, 213; **1940,** IV, 89; **1952,** II, 25.

Brachycaudus helichrysi — *see under* Leaf-curling Plum Aphid.

Bradbourne — crops on Bradbourne land, **1939,** I, 17; **1940,** I, 14. **The Bradbourne walled gardens,** by T. N. Hoblyn, **1944,** IV, 115. Soil survey of Bradbourne experimental orchards, **1946,** III, 55. **The model gardens at Bradbourne,** by J. H. Walker, **1949,** IV, 156.

Bradfield, Dr. A. E. — an appreciation, **1953,** 15.

Bramble Shoot Moth — observations on, **1938,** II, 81. **The Bramble Shoot-Webber (*Notocelia uddmanniana* L.),** by G. H. L. Dicker, **1938,** III, 191.

,, Shoot Webber — *see under* Bramble Shoot Moth.

Branch Blister — notes on, **1928,** II, 101; **1930,** II, 89; **1931,** II, 39; **1933,** III, 145; **1938,** II, 88. Organism most commonly found is *Coniothecium chomatosporum*, **1929,** II, 71. Records on Cox showed that on M.IX more blister shown than on M.I or M.V or on M.XII, while trees lacking potash were more severely affected than those receiving potash, **1935,** II, 69. Soil conditions are a major factor in the incidence of the disease, **1936,** II, 75. Suggestion that disease is physiological and that the fungus *Coniothecium* sp. associated with blisters is only secondary, **1937,** II, 87. Recent work on, **1938,** IV, 253. Primarily due to drought and also associated with lack of available potash, **1939,** II, 33. Much more blister developed on potted-up Cox trees kept under controlled drought conditions than on similar well-watered trees; potash had no effect under these conditions, **1940,** II, 28. No consistent correlation found between the presence of blister and the strength of the graft union, **1941,** II, 26. 'Blistered' bark on trees of Williams' Bon Chrétien pear on Quince C, **1945,** II, 17. Influence of manuring on, **1952,** II, 34.

Branch breakage, plums — in relation to tree form, **1952,** I, 17.

Brassy Tooth-legged Flea Beetle — *see under* Mangold Flea Beetle.

Breeding–
soft fruits–
black currants — notes on, **1924,** II, 40; **1925,** II, 39; **1928,** II, 40; **1929,** II, 37; **1930,** II, 43; **1931,** II, 30; **1932,** II, 34; **1933,** II, 40; **1934,** II, 45; **1935,** II, 42; **1936,** II, 47; **1937,** II, 57; **1938,** II, 55; **1940,** II, 17; **1941,** II, 17; **1942,** II, 16; **1943,** II, 17; **1944,** II, 21; **1945,** II, 21; **1946,** II, 21; **1947,** II, 26; **1948,** II, 30; **1949,** II, 28; **1950,** II, 25; **1951,** II, 30; **1952,** II, 25; **1953,** II, 27.
gooseberries — notes on, **1950,** II, 25; **1953,** II, 27.
raspberries — notes on, **1932,** II, 34; **1935,** II, 72; **1936,** II, 78; **1937,** II, 92; **1938,** II, 91; **1940,** II, 17; **1941,** II, 17; **1942,** II, 16; **1943,** II, 17; **1944,** II, 21; **1945,** II, 21; **1946,** II, 21; **1947,** II, 26; **1948,** II, 29; **1949,** II, 28; **1950,** II, 25; **1951,** II, 30; **1952,** II, 25; **1953,** II, 27.
Recent progress in raspberry breeding, by N. H. Grubb and C. A. Wood: describes performance of four trials, three at East Malling and one at Kirriemuir, with details of origins of Malling varieties in the trials and characteristics of Families 51, 52, 64, 69, and 72, **1953,** III, 95.
red currants — notes on, **1925,** II, 39; **1928,** II, 40; **1930,** II, 43; **1931,** II, 30; **1932,** II, 34; **1933,** II, 40; **1934,** II, 45; **1935,** II, 42; **1936,** II, 48; **1937,** II, 56; **1938,** II, 55.
strawberries — notes on, **1932,** II, 34; **1933,** II, 41; **1934,** II, 45; **1935,** II, 74; **1936,** II, 80; **1937,** II, 95; **1938,** II, 93; **1939,** II, 21; **1940,** II, 17; **1941,** II, 17; **1942,** II, 16; **1943,** II, 17; **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 26; **1948,** II, 30; **1949,** II, 28.
top fruits–
apples — *see also under* Breeding, top fruits, general; Breeding, top fruits, rootstocks, apple.
notes on, **1929,** II, 36; **1930,** II, 43; **1931,** II, 26; **1932,** II, 29; **1933,** II, 35; **1934,** II, 41; **1935,** II, 37; **1936,** II, 42; **1937,** II, 51; **1938,** II, 50; **1940,** II, 17; **1941,** II, 16; **1942,** II, 16; **1943,** II, 17; **1944,** II, 19; **1945,** II, 20; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1949,** II, 26; **1950,** II, 24; **1951,** II, 29; **1952,** II, 25; **1953,** II, 26.
A preliminary account of experiments in breeding early and mid-season dessert apples, by H. M. Tydeman, **1943,** III, 34.
general — **A progress report on breeding work with the tree fruits,** by H. M. Tydeman: past work in raising new apple, pear, and plum rootstocks and scion varieties of apples and pears, **1945,** III, 63.
peaches — notes on, **1949,** II, 26.
pears — *see also under* Breeding, top fruits, general.
notes on, **1930,** II, 43; **1931,** II, 26; **1932,** II, 29; **1933,** II, 35; **1934,** II, 41; **1935,** II, 37; **1936,** II, 42; **1937,** II, 51; **1938,** II, 50; **1940,** II, 17; **1942,** II, 16; **1943,** II, 17; **1944,** II, 19; **1945,** II, 20; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1949,** II, 26; **1950,** II, 24; **1951,** II, 29; **1953,** II, 26.
plums — notes on, **1932,** II, 29.
quinces — notes on, **1949,** II, 26.
rootstocks–
apple — *see also under* Breeding, top fruits, general; Rootstocks, resistance to Woolly Aphid.
notes on, **1923,** II, 93; **1928,** II, 39; **1929,** II, 36; **1930,** II, 42; **1931,** II, 26; **1932,** II, 28; **1933,** II, 34; **1934,** II, 40; **1935,** II, 36; **1936,** II, 41; **1937,** II, 49, 51; **1938,** II, 48, 49; **1939,** II, 20; **1940,** II, 17; **1946,** II, 20.

Breeding–top fruits–rootstocks–*continued*

cherry — notes on, **1953,** II, 26.

pear — *see also under* Breeding, top fruits, general.
notes on, **1932,** II, 28; **1933,** II, 35; **1934,** II, 40; **1935,** II, 37; **1936,** II, 42; **1937,** II, 51; **1940,** II, 17; **1948,** II, 27; **1949,** II, 26; **1952,** II, 24; **1953,** II, 26.

plum — *see also under* Breeding, top fruits, general.
notes on, **1932,** II, 28; **1933,** II, 35; **1934,** II, 40; **1935,** II, 37; **1936,** II, 42; **1937,** II, 50; **1938,** II, 49.

quince — *see under* Breeding, top fruits, rootstocks, pear.

Brick walls as anti-frost screen — *see under* Frost damage investigations, general.

Bridge grafting — *see under* Grafting.

Broad Mite — observations on, **1942,** III, 67.

Broccoli, spotting — from cold storage, due to *Alternaria* sp., **1940,** II, 24.

Broom Moth — observations on, **1937,** III, 207.

Brown Leaf-curling Pear Aphid — **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

,, Leaf-eating Weevil — *see under* Brown Leaf Weevil.

,, Leaf Weevil — observations on, **1932,** III, 109. Hens useful against, **1936,** III, 232.

,, Rot–

almonds — notes on, **1934,** III, 144.

apples — *see also under* Brown Rot, general.
notes on, **1924,** II, 107, III, 112; **1926-27** (S), III, 115; **1928-29-30** (S), III, 126; **1931,** II, 36; **1932,** III, 82; **1933,** II, 47, III, 143; **1941,** III, 40. **Brown Rot of apples: the need for careful picking and sorting,** by H. Wormald, **1926-27** (S), III, 119. Strain of *S. laxa* on ornamental shrubs able to affect fruit of apples, **1939,** II, 28. **A black apple rot caused by *Monilia cinerea,*** by H. Wormald, **1944,** III, 75. **The control of Brown Rot in commercial orchards,** by H. Wormald and M. H. Moore, **1944,** IV, 124. Heavy attacks of Brown Rot in 1949 due to weather cracks, skin blemishes, and wounds caused by birds and wasps, **1949,** II, 41. **Brown Rot of apples: note on infection associated with hail bruises and lenticels,** by M. H. Moore, **1950,** III, 131.

apricots — notes on, **1933,** III, 144; **1939,** III, 60; **1942,** II, 22.

blackberries — **Note on infection of blackberry fruits by the brown rot fungus, *Monilia fructigena,*** by M. H. Moore and P. W. Talboys, **1952,** III, 136.

cherries — *see also under* Brown Rot, general.
notes on, **1926,** II, 36; **1926-27** (S), III, 78, 115; **1928-29-30** (S), III, 127; **1931,** II, 36, III, 48; **1932,** III, 82; **1938,** II, 75.

cherries–

Morello — notes on, **1938,** II, 86; **1939,** II, 33. Two periods when flowers become infected, one while they are in bud and the other when they have opened, **1931,** III, 48. Spraying in mid-February with tar oil winter wash, diluted to contain 5% or 2·5% approximately of neutral tar oil, gave very good control by 'burning' the spore pustules on shoots killed by the disease; good control given also by Bordeaux mixture (8: 12: 100) or lime-sulphur (2·5%) spray, once or twice just pre-blossom; cutting out of infections in winter without any spray treatment also gave good control, **1936,** II, 74. Notes on recommendations against disease, **1937,** II, 86. Recent work on, **1938,** IV, 253. Good control by one winter application

Brown Rot–cherries–Morello–*continued*

of soap-emulsified 3% neutral tar oil with or without tar phenols, and by a dinitrocresol petroleum emulsion, **1940,** II, 28.

cobnuts and filberts — *see also under* Brown Rot, general; Nut Weevil.
Nut Drop—a disease of cultivated hazel nuts, by H. Wormald: *Monilia fructigena* was most common fungus found, **1943,** III, 56. Experiments to control Nut Drop by spraying, **1945,** II, 32. **Preliminary report on *Monilia fructigena,* and *Botrytis cinerea* as wound parasites of cobnuts and filberts,** by M. H. Moore, **1946,** III, 120.

filberts and cobnuts — *see under* Brown Rot, cobnuts and filberts.

general — notes on, **1917-18,** 8; **1923,** II, 90; **1926,** II, 57; **1926-27** (S), III, 78; **1929,** II, 67; **1930,** II, 87; **1934,** II, 60; **1937,** II, 75; **1939,** II, 28, 33, III, 60; **1940,** II, 23; **1942,** IV, 106. Conclusive proof that *Sclerotinia cinerea* forma *pruni,* as found on plums and cherries, can cause Blossom Wilt of Fertility pears, **1929,** II, 67. **The present distribution of the brown rot fungi: its economic significance,** by H. Wormald, **1928-29-30** (S), III, 177. Effect of scab sprays on, **1932,** III, 90. **Brown rot fungi—recent observations on their incidence,** by H. Wormald, **1933,** IV, 250. No infection resulted from applying soil taken from pots in which disease had been present the previous year, **1934,** II, 60. Found on ornamental shrub, *Pyrus purpureum,* **1935,** III, 142. Presence of as Blossom Wilt on *Pyrus japonica,* **1939,** III, 60; **1941,** III, 40. Control of, **1947,** II, 39. **This Brown Rot problem,** by M. H. Moore, **1949,** IV, 169.

medlars — notes on, **1938,** II, 75.

peaches — peaches from America infected with *Sclerotinia americana,* a disease not found in this country, **1927,** II, 53. **Note on infection of young peach shoots and of leaves by the brown rot fungus, *Monilia fructigena,*** by M. H. Moore, **1951,** III, 148.

pears — *see also under* Brown Rot, general.
notes on, **1923,** II, 91; **1924,** II, 107, III, 112; **1925,** II, 61; **1925** (S), III, 78; **1928-29-30** (S), III, 126; **1931,** II, 36. Conclusive proof that *Sclerotinia cinerea* forma *pruni,* as found on plums and cherries, can cause Blossom Wilt of Fertility pear, **1929,** II, 67.

plums — *see also under* Brown Rot, general.
notes on, **1924,** III, 112; **1925,** II, 61; **1928,** II, 97; **1930,** II, 87; **1932,** II, 39; **1933,** II, 47; **1935,** II, 57; **1936,** II, 64; **1937,** II, 75, III, 181. **Further observations on Brown Rot of plums in cold storage,** by H. Wormald and A. C. Painter, **1936,** III, 198.

quinces — *see also under* Brown Rot, general.
notes on, **1924,** III, 116; **1925** (S), III, 87.

Brown Scale — persists on cultivated nuts but destroyed by 5% tar oil wash **1948,** III, 106.

Brown Soft Scale — *see under* Brown Scale.

Brown-tail Moth — observations on, **1943,** III, 59.

Bryobia Mite — *see under* Gooseberry Red Spider Mite.

Bryobia nobilis — *see under* Gooseberry Red Spider Mite.

„ *praetiosa* — *see under* Gooseberry Red Spider Mite.

Budding — *see under* Grafting.

Bud Moth — a fruit Tortrix; observations on, **1946,** III, 126. Inclusion of 5 lb. DDT (20% wettable powder) in green cluster lime-sulphur spray reduces infestation, **1950,** III, 143. Caused considerable damage to terminal buds of maiden shoots, **1951,** II, 34.

Bud-perpetuated diseases — *see under* Plum, bud-perpetuated diseases.

„ Rot — notes on, **1940,** II, 28; **1941,** II, 26. *Fusarium* sp. seems to bear some relation to disease, **1934,** III, 144. Variety *fructigenum* (Fr.) Wr. found in inoculation experiments to be cause of Bud Rot in Grenadiers, **1938,** II, 86. Recent work on, **1938,** IV, 255.

„ rubbing — treatment of apples for successful control of biennial bearing in Miller's Seedling, **1949,** II, 24.

„ sport — **Bud sport in Royal Sovereign strawberry,** by W. S. Rogers, **1949,** III, 61.

Buff Ermine Moth — observations on, **1952,** III, 147.

Burgundy mixture — *see under* Celery Leaf Blight.

Burr-knots — confirmed have no connection with Crown Gall, **1925,** II, 61; **1926,** II, 57. **Burr-knots,** by R. G. Hatton, H. Wormald, and A. W. Witt: are not a pathological condition, but often a desirable feature in that they promote free rooting, **1926-27** (S), III, 89.

Bushy Dwarf, raspberries — *see under* Curly Dwarf, raspberries.

Byctiscus betulae — *see under* Nut Leaf Roller.

Byturus tomentosus — *see under* Raspberry Beetle.

Cabbage White Butterfly — observations on, **1948,** III, 103.

Cacoecia heparana — *see under* Tortricid moths.

„ *oporana* — *see under* Tortricid moths.

„ *podana* — *see under* Tortricid moths.

Calcium — *see under* Analysis, chemical, inorganic, calcium; Mineral deficiencies.

„ arsenate — *see under* Spray damage.

„ hydroxide — *see under* Fruit splitting, cherries; Fruit splitting, plums.

Calibration trials — *see under* Statistical studies.

Caliroa limacina — *see under* Pear Slug Sawfly.

Calocoris fulvomaculatus — *see under* Hop Capsid.

Caloglyphus kramerii — *see under* Mushroom mites.

Cambium miner on *Prunus* sp. — *see under* Plum Cambium Miner.

Camptobrochis lutescens — *see under* Capsid bugs.

Campylomma verbasci — *see under* False Tarnished Plant Bug.

Cane Blight, raspberries — *see also under* Raspberry Midge Blight.
notes on, **1928-29-30** (S), III, 135; **1930,** II, 88, IV, 95; **1931,** II, 37, III, 48; **1933,** III, 145; **1939,** III, 61; **1942,** IV, 106; **1947,** II, 37. Suggestion of functional connection between the insect, *Thomasiniana theobaldi* Barnes, and the infection of canes by fungus pathogens, **1945,** II, 32. Investigation of ability of adult and larval midge (*T. theobaldi*) and of slugs and snails to carry fungi showed that the adult midge does carry fungi, while it is improbable that the larval stages do so; slugs and snails do so internally and are not likely to do so externally, **1947,** II, 38. **Observations on the Raspberry Cane Midge (*Thomasiniana theobaldi* Barnes) and its association with Cane Blight,** by R. S. Pitcher, **1947,** III, 141. Two types of fungal infection, (1) an infection by *Leptosphaeria coniothyrium* only—at ground level (2) caused by combined attack of fungus and Raspberry Cane Midge, and at least two other fungi, i.e. a sp. of *Fusarium* and *Didymella applanata*; occurs only in areas colonized by larvae of midge, **1948,** II, 39.

Cane Midge, Raspberry — *see under* Raspberry Cane Midge.

Cane Spot–

blackberries — *see under* Septoria Spot, blackberries.

loganberries — notes on, **1928,** II, 98; **1928-29-30** (S), III, 133; **1931,** II, 38, III, 49; **1932,** II, 40; **1933,** II, 48, III, 145; **1934,** II, 63; **1935,** II, 79; **1937,** II, 101; **1938,** II, 100; **1939,** II, 29; **1940,** II, 24, 28, IV, 90; **1941,** II, 26; **1942,** II, 27; **1943,** II, 24; **1944,** II, 27; **1945,** II, 32; **1946,** II, 35; **1947,** II, 51. Preliminary sprays with lime-sulphur and Bordeaux mixture gave very promising results, **1928,** II, 98. Effectiveness of control greatly increased by application of spray at reduced strength at pre-blossom stage, **1932,** II, 40. Bordeaux mixture made with hydrated lime gave better control than lime-sulphur, **1933,** II, 48. Measurable degree of control obtained by application of lime-sulphur, either immediately before blossom period or (in combination with derris for beetle control) at standard time for beetle control, **1934,** II, 63, III, 191. Loganberry was more severely affected than Phenomenal Berry and spraying gave a significant reduction in infection, **1937,** II, 101. **Trials of loganberries, blackberries and hybrid berries,** by A. Beryl Beakbane: control measures, **1938,** IV, 213. **A review of research on Cane Spot of loganberry and Phenomenal Berry,** by R. V. Harris, A. Beryl Beakbane, and M. H. Moore: seasonal cycle of fungi on loganberry and Phenomenal Berry differs in certain fundamental respects from that of raspberry, **1939,** III, 68. Infection greater on leaves of 1942 fruiting cane where it had been trained beneath rather than above the fruiting cane in 1941, though effect of training much reduced where the best spray programme is given, **1942,** II, 27. Weaker copper sprays gave satisfactory, though incomplete, control until August but at end of September beneficial effects were much reduced, **1945,** II, 32. Pre-blossom and post-blossom copper sprays necessary to maintain control; best results obtained by adding colloidal copper to each of sprays for Raspberry Beetle control, **1946,** II, 35.

raspberries — notes on, **1924,** II, 108; **1925,** II, 62; **1925** (S), III, 81; **1926,** II, 58; **1927,** II, 54; **1926-27** (S), III, 128; **1928,** II, 97; **1929,** II, 68; **1930,** IV, 95; **1928-29-30** (S), III, 134; **1931,** II, 37; **1932,** III, 84; **1933,** III, 145; **1935,** IV, 234; **1937,** II, 93; **1938,** III, 170; **1944,** II, 27, IV, 110; **1945,** II, 33; **1946,** II, 48; **1947,** IV, 176; **1948,** II, 52, IV, 141; **1949,** II, 51; **1950,** II, 50. **Three raspberry diseases,** by R. V. Harris: includes account of Cane Spot disease, **1925,** IV, 64. **Raspberry Cane Spot and its control,** by R. V. Harris, **1927,** IV, 57. Good control by sprays of lime-sulphur and Bordeaux mixture, **1928,** II, 97. Lime-sulphur gave better control than Bordeaux mixture, but lime-sulphur caused considerable reduction of crop, **1929,** II, 68. **The infection of raspberry fruits by the cane-spot fungus,** by R. V. Harris, **1932,** III, 86. Spray of 5% lime-sulphur, applied at 400 gal. per acre at bud-burst, is most efficient treatment, **1946,** II, 48. Variability of control of, **1947,** II, 51. Testing efficacy of atomized lime-sulphur concentrate for control of, **1950,** II, 50.

Rubus spp. — Leaf Spot of, **1941,** III, 42.

Canker–

apples — *see under* Apple Canker.

Bacterial — *see under* Bacterial Canker.

hops — *see under* Hop Canker.

Canker–*continued*

Papery Bark — *see under* Papery Bark Canker.

pears — *see under* Pear Canker.

'Rough Bark' — *see under* 'Rough Bark' Canker, apples.

Surface — *see under* Surface Canker, apples.

Canker and Dieback, mulberries — occurrence of, **1926-27** (S), III, 83.

Canning, raspberries — notes on, **1950,** II, 51; **1951,** III, 82; **1953,** III, 95.

Cantharis livida — *see under* Soldier Beetle.

Capitophorus fragariae — *see under* Strawberry Aphid.

Capsid bugs — *see also under* Apple Capsid; Black-kneed Capsid; Common Green Capsid; Hop Capsid.
A capsid, *Camptobrochis lutescens*, found preying on Nut Aphid, **1948,** III, 105.

Capua reticulana — *see under* Summer Fruit Tortricid.

Carbohydrate relations — in apple leaves, **1932,** II, 37; **1933,** II, 43. **Preliminary observations on the carbohydrate content of apple leaves on different rootstocks,** by E. R. Leonard: consistent difference is demonstrable between the 'dextrose' and 'sucrose' content of leaves of Lane's Prince Albert from trees on M.IX and M.XII rootstocks, **1937,** III, 173. **Studies in the non-setting of pears. VI. The injection of pear trees for the diagnosis of carbohydrate and mineral deficiencies,** by F. C. H. Gayner, **1940,** III, 50.

Carbohydrates — soluble in fruit plants; methods for estimating, **1952,** II, 32.

Carbon dioxide — *see also under* Manganese.
lead arsenate unaffected by carbon dioxide, **1943,** II, 27. Effect of increased carbon dioxide in the soil on the growth of M.V apple rootstocks and of Majestic potatoes, **1952,** II, 33. **Some effects of the addition of carbon dioxide to soil of pot cultures of Malling V apple rootstocks,** by B. D. Bolas and H. C. Ruck: causes reduction in root growth, stem weight, and in movement of materials within the plant, **1952,** III, 99.

Carotene — *see under* Chlorosis.

Carrots–

Black Rot — *see under* Black Rot, carrots.

general — foliage attacked by Watercress Beetle, **1942,** III, 64.

Violet Felt Rot — *see under* Violet Root Rot.

Casebearer caterpillar — *see under* Apple and Plum Casebearer.

Cauliflower Disease, strawberries — notes on, **1950,** II, 43; **1951,** II, 40, 44; **1952,** II, 34, III, 138. Modified symptoms produced by bacterium *Corynebacterium fascians* alone, **1953,** II, 37, 44.

Caustic soda — *see under* Winter washes, general.

Celery, Leaf Blight — *see under* Leaf Blight, celery.

Census, fruit — **The value of a fruit farm census,** by T. N. Hoblyn, **1942,** IV, 93.

Cephalothecium roseum — *see under* Pink Rot.

Ceratitis capitata — *see under* Mediterranean Fruit Fly.

Cercopis sanguinea — *see under* Red and Black Froghopper.

,, *vulnerata* — *see under* Red and Black Froghopper.

Cercospora cantuariensis — *see under* Cercospora Leaf Spot.

Cercospora Leaf Spot — notes on, **1924,** II, 109; **1925,** II, 62; **1928-29-30** (S), III, 131.

Cercosporella antirrhini — *see under* Antirrhinum Leaf Spot.

Cereal crops — *see under* Corn crops and trials.

Certification schemes — *see also* references to Certificate and Nuclear Stock Propagation Schemes *under* Propagation, raspberries; Propagation, strawberries.
Certification schemes for fruit plants, by B. G. Levy: describes the Black Currant Certificate, Strawberry 'A' Certificate, Strawberry Special Stock Certificate, Raspberry Certificate, and Fruit Tree Rootstocks Scheme, **1947,** IV, 178.

Cerura vinula — *see under* Puss Moth.

Chaetocnema concinna — *see under* Mangold Flea Beetle.

Chafer beetles — *see under* Beetles, Chafer.

Chalaropsis thielavioides — *see under* Walnuts, Graft Disease.

Chalcid wasps — *Copidosoma tortricia* as parasite on larvae of Strawberry Tortrix Moth, **1943,** III, 59.

Chat Fruit — notes on, **1952,** IV, 179. Attempts at transmission by grafting failed, **1948,** II, 40.

Chemicals — **Common names for chemicals,** by A. H. M. Kirby, **1952,** IV, 185.

Cherry (ies)–

- Apple and Plum Casebearer — attack by, **1937,** III, 206.
- Bacterial Canker — *see under* Bacterial Canker, cherries.
- bacteriosis — *see under* Bacterial Canker, cherries.
- bark beetles — *see under* Fruit Bark Beetle; Large Fruit Bark Beetle.
- -bark Tortrix Moth — observations on, **1953,** III, 162.
- Beetle Mite — *see under* Beetle Mite.
- Blackfly — observations on, **1928,** II, 109; **1944,** III, 82. Routine applications of tar oil winter washes have reduced pest to a minimum, **1949,** III, 128.
- blossoming — *see under* Blossoming, general.
- Borer Beetle — *see under* Oak Pinhole Borer.
- breeding — *see under* Breeding, top fruits, rootstocks, cherry.
- Brown Rot — *see under* Brown Rot, cherries.
- cropping — *see under* Cherries, Experimental Farm.
- Dieback — *see under* Bacterial Canker, cherries.
- double-working — *see under* Double-working, cherries.
- Experimental Farm — acreage, cropping, and general notes, **1928,** I, 28; **1930,** I, 33; **1931,** I, 14; **1932,** I, 16; **1933,** I, 17; **1934,** I, 22; **1935,** I, 20; **1936,** I, 17; **1937,** I, 20; **1938,** I, 24; **1939,** I, 15; **1940,** I, 12; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 17; **1949,** I, 16; **1950,** I, 16; **1951,** I, 18; **1952,** I, 16; **1953,** I, 17.
- *Fomes pomaceus* — *see under* Fomes Disease.
- frameworking — *see under* Grafting.
- frost damage — *see under* Frost damage investigations, cherries.
- Fruit Moth — observations on, **1938,** III, 182; **1941,** III, 47; **1953,** III, 164. Reduced by thorough application of tar oil wash, **1947,** III, 137.
- fruit size — *see under* Fruit size; Statistical studies.
- general — **Planning a cherry orchard,** by N. H. Grubb, **1944,** IV, 104.
- incompatibility — *see under* Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

Cherry (ies)–*continued*

layer beds, wilting in — *see under* Layer beds, *Prunus* spp., wilting in.

Leaf Curl — observations on, **1928-29-30** (S), III, 131; **1937,** III, 184.

Leafhopper — observations on, **1940,** III, 64; **1952,** III, 148.

Leaf Scorch — notes on, **1917-18,** 9; **1924,** III, 114; **1925** (S), III, 79.

Leaf Spot — *see under* Bacterial Canker, cherries.

mahaleb — *see under* Rootstocks, cherry.

mazzard — *see under* Rootstocks, cherry.

mineral deficiencies — *see under* Mineral deficiencies.

Morello–

- Bacterial Blossom Blight and Leaf Spot — *see under* Bacterial Blossom Blight, cherries, Morello.
- Brown Rot — *see under* Brown Rot, cherries, Morello.
- cropping — *see under* Cherries, Experimental Farm.
- Fruit Tree Red Spider Mite — damage by, **1934,** III, 167.
- growing, general — **Some aspects of Morello cherry culture,** by N. H. Grubb, A. C. Painter, and H. Wormald, **1931,** IV, 57.
- pruning — *see under* Pruning, cherries.
- Verticillium Wilt — *see under* Verticillium Wilt, cherries, Morello.

Mottle — notes on, **1950,** II, 39, IV, 209.

Necrotic Ring-spot — peach, apricot, mazzard, morello, and mahaleb spp. good indicators of, **1951,** II, 41.

pollination — **A seasonal influence on cherry pollination and ripening,** by N. H. Grubb, **1948,** IV, 131.

propagation — *see under* Propagation, cherries.

pruning — *see under* Pruning, cherries.

Rasp Leaf — notes on, **1950,** II, 39, IV, 209; **1952,** IV, 179.

ripening — **Abnormal ripening of cherries,** by S. G. Thompson: due to boron deficiency, **1943,** III, 51. **A seasonal influence on cherry pollination and ripening,** by N. H. Grubb, **1948,** IV, 131.

rootstocks — *see under* Rootstocks, cherry.

Rosette — notes on, **1950,** II, 39, IV, 210; **1952,** III, 131.

Rusty Mottle — notes on, **1950,** II, 39, IV, 210; **1952,** II, 36.

Scab — notes on, **1947,** II, 37; **1948,** II, 39. **Cherry Scab (*Fusicladium cerasi* (Rabenh.) Sacc.) in Kent in 1943,** by M. H. Moore, **1943,** III, 54.

Shield Bug — *see under* Forest Bug.

Shoot Wilt — *see under* Bacterial Canker, cherries.

Small Leaf — notes on, **1924,** III, 114.

splitting — *see under* Fruit splitting.

Stag Beetle — *see under* Stag Beetle.

stem-building — *see also under* Bacterial Canker, cherries; Double-working. notes on, **1952,** II, 22.

Stockton Morello — dying back of shoots of Frogmore on Stockton Morello may be manifestation of stock/scion incompatibility, **1948,** II, 23.

suckering — *see under* Pruning, cherries.

Cherry (ies)–*continued*

Tatter Leaf — notes on, **1950,** II, 39, IV, 209; **1952,** IV, 179. Peach, apricot, mazzard, morello, and mahaleb spp. good indicators of, **1951,** II, 41.

Twig Blight — brought about by infection through the flowers, **1938,** III, 168.

varieties–

collections, trials, and classification — notes on, **1937,** II, 49; **1943,** II, 17; **1944,** II, 19; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1951,** II, 29. **Varieties of cherries,** by N. H. Grubb, **1936,** IV, 285. Trials planted at Tunstal, **1947,** II, 25.

Vein-clearing — notes on, **1950,** II, 39, IV, 209.

virus diseases — *see also under* Cherry Necrotic Ring-spot; Cherry Mottle; Cherry Rasp Leaf; Cherry Rosette; Cherry Rusty Mottle; Cherry Small Leaf; Cherry Tatter Leaf; Cherry Vein-clearing; Propagation, virus diseases; Virus diseases, heat treatment, cherries.
notes on, **1950,** II, 39; **1951,** II, 41; **1953,** II, 39. **Virus diseases of sweet cherries,** by A. F. Posnette, **1950,** IV, 209. Indicators for, **1951,** II, 41; **1952,** II, 36.

Witches' Brooms — *see under* Witches' Brooms.

Wither Tip — *see under* Wither Tip, cherries.

China clay — use in fungicide trial with phenyl mercury chloride against Apple Scab, **1946,** II, 42.

Chlordane — *see under* Apple Sawfly.

Chlorogenic acid — in apple juice, **1952,** II, 24. In pear leaves, **1952,** II, 31.

Chlorophyll — *see under* Chlorosis.

Chlorosis — *see also under* Iron; Plant injection.
peach tree with chlorosis injected with iron gave normal colour to leaves and a normal crop, **1934,** II, 58. **Tree injection—the diagnosis and cure of chlorosis in a peach tree: a progress report,** by W. A. Roach: cured by injection of 0·5% solution of ferric chloride through holes in two main branches, **1934,** III, 139. **Leaf injection,** by W. A. Roach: cure of chlorosis in pear; results suggest that similar deficiency diseases can be diagnosed and cured in three weeks, **1935,** III, 134. **Iron 'shortage' chlorosis in apple trees grown in water culture,** by W. A. Roach: due to faulty iron metabolism as shown by interveinal method of leaf injection, **1936,** III, 146. **Iron shortage chlorosis in the plantation: a progress report,** by W. A. Roach and B. F. G. Levy: incipient stage characterized by a light green colour of foliage indistinguishable at sight from that associated with nitrogen shortage, **1936,** III, 153. Straight line relationship between amounts of chlorophyll and carotene in normal and chlorotic apple leaves, **1951,** II, 37. **Chlorosis in apple leaves,** by A. E. Bradfield and A. E. Flood: using M.VII rootstock chlorophyll and carotene determined in healthy leaves and in leaves exhibiting chlorosis arising from (*a*) iron deficiency, (*b*) potassium deficiency, and (*c*) virus infection; linear relationships found between amounts of the pigments, **1952,** III, 109.

Chlorotic Disease, hops — notes on, **1941,** II, 43; **1949,** IV, 177.

Chromatography, paper — use of, **1950,** II, 36; **1952,** II, 31. Separating growth promoting from inhibiting substances, **1952,** II, 29, III, 89.

Cicadella stellulata — *see under* Cherry Leafhopper.

Cidaria immanata — *see under* Dark Marbled Carpet Moth.

,, *truncata* — *see under* Common Marbled Carpet Moth.

Cladosporium carpophilum — *see under* Plum Scab.

,, *fulvum* — *see under* Tomato Leaf Mould.

,, *herbarum* — growing on sticky secretion of Pear Sucker, **1952,** III, 149.

Classification of fruits — *see under* individual fruits, varieties, collections, trials, and classification.

Clay-coloured Weevil — observations on, **1925** (S), III, 159; **1928-29-30** (S), III, 194; **1943,** III, 61; **1944,** III, 79; **1945,** III, 92; **1952,** III, 146. Damage to black currant leaves, **1924,** III, 165. Controlled by derris and lead arsenate dusts, **1942,** III, 64. Curious that weevil is never troublesome once hop bines have attained a length of 3 ft. or so, **1946,** III, 124. Application of 5 and 10% DDT dusts against gave good results, **1947,** II, 51. 0·4% DDT wet spray at 300 gal. per acre more efficient than either 5 or 10% DDT dusts, **1948,** II, 53. Observed gnawing bases of gooseberry shoots, **1948,** III, 103. Controlled by 0·4% DDT wet spray at 300 gal. per acre or 10% DDT dust at 70 lb. per acre, **1949,** II, 51. Use of grease bands recommended, **1950,** III, 142. Observed attacking young tips of hop shoots, **1951,** III, 155.

Cleaning leaves — *see under* Analysis, chemical, inorganic, general.

Clearwing moths — *see under* Apple Clearwing Moth; Currant Clearwing Moth.

Clouded Drab Moth — observations on, **1953,** III, 163.

Clover — *see under* Cover cropping; Crimson clover.

Clover Seed Weevil — on apple leaves, **1948,** III, 102.

Cluster Cup Rust–

gooseberries — notes on, **1928-29-30** (S), III, 131; **1933,** III, 146; **1934,** III, 146.

medlars — notes on, **1928-29-30** (S), III, 131.

Clytus arietis — *see under* Wasp Beetle.

Cobalt — has so far brought no improvement when injected into plants, **1945,** II, 29.

Cobb's Mosaic, hops — mild non-lethal form of mosaic, **1952,** II, 35. Insect experiments on, **1953,** II, 39.

Cobnut(s)–

Brown Rot — *see under* Brown Rot, cobnuts and filberts.

Mildew — notes on, **1928-29-30** (S), III, 131.

Coccinella septempunctata — *see under* Seven Spot Ladybird.

Cockchafer — observations on, **1945,** III, 92; **1946,** III, 125. Attacking roots of hop, **1948,** III, 102.

Codling Moth — *see also under* Spraying, general. For further experiments, relating mainly to impregnation of tree banding materials, *see under* Tree banding.
observations on, **1928-29-30** (S), III, 198; **1932,** III, 113; **1933,** III, 178; **1934,** III, 169; **1935,** III, 170; **1936,** II, 71, 72, III, 226; **1938,** IV, 257; **1944,** III, 79; **1948,** III, 104; **1949,** II, 43; **1950,** II, 43, 45, III, 142; **1953,** II, 44, 47. 14% infection reduced to 3% by a single application of lead arsenate, **1935,** II, 68. **Observations on Codlin Moth (*Cydia pomonella* L.) in 1935,** by W. Steer: lead arsenate reduced damage from 14% to 3%, while nicotine and derris gave indifferent results, **1935,** III, 186. **Observations on Codling Moth (*Cydia pomonella* L.) in 1936,** by W. Steer: larvae commenced attack on fruit at end of June, entering pears almost always through eye and apples mostly at the side; first cover wash of lead arsenate should be applied late in June, also at petal-fall and in middle of July if necessary, **1936,** III, 250. **The control of**

Codling Moth–*continued*

Codling Moth: a suggested spray programme, by W. Steer, **1936,** IV, 302. Confirmed value of spraying with lead arsenate in late June, **1937,** II, 86. Evidence of a second brood in this country, **1937,** III, 204. Adequately controlled by late June application of lead arsenate; derris reduced attack somewhat, but was less effective than lead arsenate, **1938,** II, 86. Main generation can be controlled by lead arsenate late in June; addition to spray of 1% refined petroleum oil increases deposit, **1939,** II, 32. Spray with lead arsenate at 2 lb. to 100 gal. of water at end of June, **1943,** III, 59. **Codling Moth (*Cydia pomonella* L.),** by A. M. Massee: controlled by spraying during latter part of June with lead arsenate, **1944,** IV, 127. Several different preparations of DDT at 0·05% were generally less effective than lead arsenate at 0·2%, **1945,** II, 39. Adequate control by spray of 2 lb. lead arsenate to 100 gal. of water, **1945,** III, 94. Insecticidal trials, **1946,** II, 42; **1949,** II, 47. Zinc fluoroarsenate gives as good control as lead arsenate, but little soluble arsenic when mixed with lime-sulphur, **1948,** II, 46. **Trials of zinc fluoroarsenate against Codling Moth, *Cydia pomonella* L.,** by A. H. M. Kirby: no advantage over lead arsenate, **1950,** III, 160. Overwintering of larvae and emergence of moths studied by use of bait traps and mercury vapour light traps, **1951,** II, 44. Comparison of toxaphene, aldrin, dieldrin, and dinitrocaprylphenyl crotonate with DDT and with lead arsenate; DDT outstanding, **1951,** II, 47. **Supplementary measures for the control of Codling Moth, *Cydia pomonella* (L.),** by Joan R. Groves: hibernation of Codling Moth larvae in packing sheds and apple boxes is considered and spray measures recommended, **1951,** III, 174. Studies of parasites, **1952,** II, 40. Toxaphene, with or without synthetic sticker, compared with DDT and lead arsenate, **1952,** II, 43.

Codlin Moth — *see under* Codling Moth.

Colchicine, use in black currant breeding — *see under* Black currants, colchicine, use on seedlings.

Coleophora nigricella — *see under* Apple and Plum Casebearer.

Coleoptile technique–

curvature — use of controlled chambers, **1946,** II, 30. *Avena* seedlings now grown collectively in zinc trays instead of individually in small glass tubes, **1947,** II, 33. **A method for estimating hormone activity in the plant,** by M. Rosalie Rawes and E. S. J. Hatcher: a description of the *Avena* coleoptile method for estimating auxins, **1948,** IV, 157. Investigations, including response of coleoptiles to indole-3-acetic acid, **1949,** II, 34. Net growth-promoting or growth-inhibiting activities of simple ether extracts assayed, **1952,** II, 29.

straight growth — notes on, **1952,** II, 29. **The assay of growth substances by a modified straight growth method,** by C. R. Hancock and H. W. B. Barlow, **1952,** III, 88.

Coleosporium senecionis — *see under* Pine Blister Rust.

Collar Rot–

apples — notes on, in Cox, **1948,** II, 26; **1949,** II, 24.

red currants — *see under* Fomes Collar Rot.

Colletotrichum lindemuthianum — *see under* Bean Scab.

Colloidal copper — *see under* Copper, colloidal.

,, sulphur — *see under* Sulphur, colloidal.

Colotois pennaria — *see under* Feathered Thorn Moth.

Colour, fruit — *see under* Fruit colour.

Comma Butterfly — observations on, **1941,** III, 48.

Common Earwig — *see under* Earwigs.

,, Gooseberry Sawfly — observations on, **1952,** III, 148. Controlled by a lead arsenate, nicotine, derris, or pyrethrum spray; dusts also effective, **1943,** III, 62.

,, Green Capsid — *see also under* Black Currant Reversion.
observations on, **1929,** II, 81; **1943,** III, 63. Attack on pear, **1941,** III, 50. Nymphs and adults of *Lygus pabulinus* shown to cause branching in raspberries; spraying with nicotine had little effect on insect or suppression of branching, **1947,** II, 51. Attack on soft fruit, **1948,** III, 105. **Observations on *Lygus pabulinus* (L.), a pest of raspberries in Scotland,** by A. R. Hill, **1951,** III, 181.

,, Marbled Carpet Moth — observations on, **1938,** III, 182; **1942,** III, 64.

,, Swift Moth — *see under* Garden Swift Moth; Ghost Swift Moth.

Compatibility — *see under* Incompatibility.

Concentrated dip — *see under* Propagation, cuttings, stem, hardwood.

Concentrate spraying — *see under* Spraying, low volume.

Concentric ring-spot virus, plums — *see under* Plum Ring Spot and Shot Hole.

Conference pear — *see under* Pears, Conference.

Confused Flour Beetle — observations on, **1950,** III, 177.

Coniopterygids — *see under* Dustywings.

Coniopteryx tineiformis — *see under* Dustywings.

Coniothecium chomatosporum — *see also under* Branch Blister; Sooty Mould, plums.
Investigations on Coniothecium: a progress report, by M. H. Moore: a fungus associated with cracking and russeting of apple fruits and blistering of the twigs, **1928-29-30** (S), III, 150. A fungus attacking young branches of Cox on M.II, **1934,** III, 142.

Coniothyrium concentricum — *see under* Leaf Spot, yucca.

,, *fuckelii* — *see also under* Cane Blight, raspberries.
fungus inducing root rot of strawberries, **1934,** II, 64.

Conopia myopaeformis — *see under* Apple Clearwing Moth.

Contarinia humuli — *see under* Hop Strig Midge.

,, *pyrivora* — *see under* Pear Midge.

Convolvulus arvensis — *see under* Bindweed.

Conventzia pineticola — *see under* Dustywings.

,, *psociformis* — *see under* Minute Lacewing.

Copidosoma tortricis — *see under* Chalcid wasps.

Copper–

colloidal — *see under* Cane Spot.

general — *see under* Analysis, chemical, inorganic, copper; Apple Scab; Bacterial Canker; Bordeaux mixture; Burgundy mixture; Plant injection; Spray damage; Spraying, general; Spray residues.

Coral Spot — occurrence on apples and currant bushes, particularly red currant, **1936,** III, 188; **1939,** III, 60. Due to *Nectria cinnabarina*; observations on attacks on red currant, walnut, and apple trees, **1937,** III, 184.

Cordons — *see under* Intensive fruit culture, cordons.

Cork — *see under* Functional disorders, Internal Cork; Functional disorders, Superficial Cork.

Corn crops and trials — *see also under* Manganese; Mineral deficiencies.

barley, Experimental Farm — trials, **1919-20,** 6; **1922,** 49. Acreage, cropping, and general notes, **1941,** I, 12; **1942,** I, 13; **1943,** I, 13; **1944,** I, 15; **1945,** I, 14; **1946,** I, 13; **1947,** I, 17; **1948,** I, 19; **1949,** I, 18; **1950,** I, 19; **1951,** I, 20; **1952,** I, 18; **1953,** I, 19.

general — **Corn trials in 1924,** by R. G. Hatton and J. Amos, **1924,** III, 183.

oats, Experimental Farm — acreage, cropping, and general notes, **1913-14,** 3; **1914-15,** 8; **1940,** I, 11; **1943,** I, 11; **1952,** I, 15; **1953,** I, 17. Trials, **1919-20,** 6; **1920-21,** 7; **1922,** 49; **1924,** III, 183.

wheat, Experimental Farm — trials, **1920-21,** 7; **1922,** 49; **1924,** III, 183. Acreage, cropping, and general notes, **1940,** I, 14; **1941,** I, 12; **1942,** I, 13; **1943,** I, 13; **1944,** I, 15; **1945,** I, 14; **1946,** I, 13; **1947,** I, 17; **1948,** I, 19; **1949,** I, 18; **1950,** I, 19; **1951,** I, 20; **1952,** I, 18; **1953,** I, 19.

Cornwallis of Linton, Lord — an appreciation, **1935,** 13.

Corticaria elongata — *see under* Beneficial insects and mites, pollinators.

Corticarina gibbosa — *see under* Beneficial insects and mites, pollinators.

Corticium Disease, turf — in cover crop, **1941,** III, 42.

Corticium fuciforme — *see under* Corticium Disease, turf.

Corylobium avellanae — *see under* Nut Aphid.

Corynebacterium fascians — *see under* Cauliflower Disease, strawberries.

Cossus cossus — *see under* Goat Moth.

Cover cropping — *see also under* Soil moisture studies.
notes on, **1940,** II, 16; **1941,** II, 15; **1944,** II, 18, 21; **1945,** II, 18, 21; **1946,** II, 18, 22; **1947,** II, 23, 27; **1948,** II, 25; **1950,** II, 22, 36; **1951,** II, 27, 38; **1952,** II, 22, 36. Commencement of grassing down on Experimental Farm, using perennial ryegrass, **1930,** I, 34. Influence of grassing down on Apple Scab, **1931,** II, 40. Manuring and grassing down, **1938,** IV, 205. **Practical notes on cover cropping of orchards,** by W. S. Rogers, **1940,** IV, 83. Corticium Disease of turf in cover crop, **1941,** III, 42. Harmful effect of winter washing on young seedling cover crops was more severe in 1941, **1942,** II, 15. Influence of grassing down on Apple Canker, **1942,** II, 27. Turning in of some grass and clover swards in March, with compensating nitrogen, increased growth and cropping of trees in same year as the disking; three forms of nitrogenous fertilizer on a mixed grass and clover sward showed that all three forms reduced amount of clover, but a subsoil application of nitrogen showed no check to the clover, **1943,** II, 16. **Orchard soil management, including water conservation and cover cropping,** by W. S. Rogers, **1943,** IV, 85. Soil organic matter can be appreciably increased even after three years by cover crops with beneficial effect on the apple crop and without checking tree growth; experiment to ascertain best time of sowing and least harmful time for spraying over annual cover crops showed that plants sown early enough to become well established are relatively little damaged either by winter weather or winter washes, especially if winter washing is deferred till as late as possible, **1944,** II, 18. Effect on water penetration, **1945,** II, 19. In long-term ley experiment performance of trees during 1949 drought was very satisfactory; successful management of grassed orchards depends on (*a*) avoiding vigorous grasses in seeds mixtures, (*b*) frequent mowing, and (*c*) application of

Cover cropping–*continued*

adequate artificial nitrogen, **1949,** II, 23. Cover cropping and straw mulching, **1953,** II, 25.

Coxcomb Prominent Moth — observations on, **1942,** III, 65.

Cox Spot — a spotting of apple leaves prevalent on Cox, **1939,** III, 59.

CPBS — *see also under* Fruit Tree Red Spider Mite.
associated with splitting of Worcester Pearmain, **1952,** II, 43.

Crab Leaf Miner — observations on, **1945,** III, 94.

Cracking of fruit — *see under* Fruit splitting.

Crepis taraxacifolia — extract shown to have fungicidal activity, **1942,** II, 26.

Cress root test — notes on, **1952,** II, 29.

Crimson clover — use as annual cover crop for loganberries, **1944,** II, 21.

Crinkle, strawberries — *see also under* Strawberry Aphid; Strawberries, 'Crinkle, False'; Strawberries, virus diseases.
notes on, **1937,** II, 97; **1938,** II, 95, III, 171, IV, 228; **1951,** II, 41. 'Crinkle' group of symptoms complex in causal origin, i.e. 'severe' or 'advanced' Crinkle differs in causal origin from 'mild' Crinkle, and yellow-edge virus exists in 'multiple-strain' form, **1936,** II, 82. **Studies in strawberry virus diseases. III. Transmission experiments with 'Crinkle', 1935,** by R. V. Harris: confirmatory evidence of virus origin of 'Crinkle' symptoms, and available data is considered to suggest that Yellow-edge is distinct from 'Crinkle', **1936,** III, 212. Positive results obtained from Mild Crinkle on seedlings of tobacco (*Nicotiana tabacum*), **1937,** II, 98. **A bibliographical note on the distinction between mild and severe strawberry Crinkle,** by R. V. Harris, **1937,** III, 201. Testing of Rose Leafhopper (*Typhlocyba rosae* L.) as vector of Crinkle, but negative results obtained, **1940,** II, 26. Alate viviparous female stage of Strawberry Aphid vector of Crinkle, **1941,** II, 23.

Croesus septentrionalis — *see under* Hazel Sawfly.

Cronartium ribicola — *see under* Currant Rust.

Cropping — *see under* individual fruits; Farm, Experimental, reports; Statistical studies.

Crotch angles, control of — notes on, **1951,** II, 28; **1952,** II, 23, 29. Use of indole-3-butyric acid applied to cut-back shoot of plum, **1950,** II, 30. **The use of growth substances to widen crotch angles,** by A. P. Preston and H. W. B. Barlow: in experiments with Victoria plums indole-3-butyric acid showed an improvement of 23° for first branch crotch angle over control treatment, **1950,** III, 76. Layer-bed shoots of plum rootstocks Myrobolan B and Brompton are sensitive test objects for work on; treatment of tip of the cut-back shoot with indole-3-butyric acid gave satisfactory results with plum, but not with apple; control of on trees of Laxton's Superb apple and Victoria plum, **1951,** II, 34.

Crown Gall–

apples — notes on, **1920-21,** 5; **1922,** 23; **1923,** II, 90; **1924,** II, 107; **1929,** II, 67; **1931,** II, 36; **1935,** III, 145; **1937,** II, 74; **1938,** II, 75. Disease most commonly seen at base of original layer at point where severed from parent stool, **1922,** 40. Different degrees of resistance and susceptibility to Crown Gall amongst various rootstocks, and an influence of scion on the susceptibility of the stock, **1923,** II, 90. **Field observations on the Crown-gall of nursery stocks,** by H. Wormald and N. H. Grubb: no apple rootstock raised at East Malling has proved wholly immune to Crown Gall, **1924,** III, 122.

Crown Gall–apples–*continued*

Burr-knots not a form of Crown Gall, **1925,** II, 61; **1926,** II, 57. **The Crown-gall disease of nursery stocks. II. The relative susceptibility of apple stocks to Crown-gall: a progress report,** by R. V. Harris: used M.VII (very susceptible) and M.I (moderately resistant) and confirmed Wormald's classification of susceptibility, **1928-29-30** (S), III, 140. Method of testing susceptibility of rootstocks to Crown Gall, **1930,** II, 87. Plants which received sodium nitrate produced more and larger galls than those plants which were not so treated, **1932,** II, 39. Sodium nitrate applied to soil had no effect on production of galls, **1934,** II, 60. Notes on susceptibility of apple rootstocks, **1935,** II, 57, III, 145. **The Crown Gall disease of nursery stocks. III. A progress report on experiments from 1929 to 1937 to determine the relative susceptibility of Malling apple stocks and including the production of galls by synthetic growth substances,** by R. V. Harris and H. L. Pearse, **1937,** III, 187. **An experiment on the control of Crown Gall on vegetatively raised apple rootstocks,** by H. Wormald and R. J. Garner: a mixture of soil, Uspulun, and water, used as a slurry into which apple rootstocks were immersed before planting, gave some control, **1944,** III, 73.

blackberries — notes on, **1935,** II, 57, III, 145.

general — notes on, **1928,** II, 97; **1934,** III, 143; **1936,** II, 64; **1937,** II, 74. Organism from gall on dock and on raspberry stem produced galls when inoculated into tomato stems, **1927,** II, 53. Production of galls by treatment with growth substances, **1937,** II, 69; **1938,** II, 69. With NAA galls produced irrespective of month of inoculation, although those treated in April, May, and June produced larger galls than those treated in January, February, and March, but with the bacterium those treated in January yielded no galls, those in February two only, while those in other months yielded many galls; growth substance caused an appreciable diminution in the amount of new wood produced during the season as compared with controls and those inoculated with bacterium, **1938,** II, 75. There are biological strains of *Bacterium tumefaciens* which differ in their ability to infect certain host plants and in their cultural characters, **1940,** II, 23. Rootstocks should be resistant to, **1950,** IV, 193.

lucerne — due to *Urophlyctis alfalfae*, **1925** (S), III, 85.

pears — notes on, **1935,** III, 145.

raspberries — *see under* Crown Gall, general.

Crown rot, hops — *see under* Hops, crown rot.

,, Rot, raspberries — notes on, **1935,** IV, 233.

Crucifers, Black Rot — *see under* Black Rot, crucifers.

Cryptomyzus ribis — *see under* Red Currant Blister Aphid.

Cryptosporium minimum — *see under* Black Blotch, raspberries.

Cuckoo Spit Insect — *see under* Red and Black Froghopper.

Curly Dwarf, raspberries — believed connected with decline of Lloyd George, **1951,** II, 51.

Currant(s)–

Aphid — *see under* Currant-Lettuce Aphid.

black — *see under* Black currant(s).

Capsid — *see under* Common Green Capsid.

Currant(s)–*continued*

Clearwing Moth — notes on, **1936,** III, 225. Gooseberry cuttings attacked, **1948,** III, 104. Suggested control 5% DDT (scientific name should have been shown as *Aegeria tipuliformis* and not *A. culiciformis*), **1951,** III, 155.

Eelworm — *see under* Leaf and Bud eelworms, on black currants.

Leaf Spot — *see under* Leaf Spot, currants.

-Lettuce Aphid — observations on (scientific name should have been shown as *Hyperomyzus lactucae* and not *Cryptomyzus ribis*), **1948,** III, 105. Tested as possible vector of Black Currant Reversion with negative results, **1951,** III, 164.

red — *see under* Red currant(s).

Rust — *see also under* Pine Blister Rust.
notes on, **1938,** III, 169; **1940,** III, 57. Usually prevalent towards end of summer, **1934,** III, 146.

Shoot Borer — observations on, **1936,** III, 226; **1941,** III, 48.

,, Moth — *see under* Currant Shoot Borer.

Cuttings — *see under* Propagation, cuttings.

Cycnia mendica — *see under* Muslin Moth.

Cydia funebrana — *see under* Plum Fruit Moth.

,, *pomonella* — *see under* Codling Moth.

Cylindrocarpon radicicola — fungus inducing root rot of strawberries, **1934,** II, 64.

Cylindrocladium scoparium — *see under* Layer beds, *Prunus* spp., wilting in.

Cytosporina ribis — *see under* Black currants, dieback.

Czar Spot — spotting of Czar plum leaves, probably due to drought, **1939,** III, 59.

2,4-D — *see under* 2,4-Dichloro-phenoxy-acetic acid.

Dahlia Leaf Blotch — *see under* Leaf Blotch, dahlias.

Damaging agent — ammonium thiocyanate, use as in spray on under surface of raspberry leaves, **1951,** II, 35, III, 115, 119.

Damsons — *see under* Plum(s).

Dark Marbled Carpet Moth — observations on, **1943,** III, 60.

Dasyneura pyri — *see under* Pear Leaf Midge.

,, *tetensi* — *see under* Black Currant Leaf Midge.

DCPA, sodium salt — used in strawberry weedkiller trial, **1950,** II, 26.

DDT — *see also under* Anthocorid bugs; Apple Blossom Weevil; Apple Capsid; Apple Clearwing Moth; Apple and Plum Casebearer; Beneficial insects and mites; Black Currant Leaf Midge; Bud Moth; Clay-coloured Weevil; Codling Moth; Currant Clearwing Moth; Earwigs; Fruit Tree Red Spider Mite; Gooseberry Red Spider Mite; Ground beetles; Nut Weevil; Ovicides; Pear Leaf Midge; Pear Sucker; Raspberry Beetle; Raspberry Moth; Red Spider Mite; Strawberry Blossom Weevil; Strawberry Ground beetles; Strawberry Mite; Strawberry Rhynchites; Summer Fruit Tortricid; Tortricid moths; Vine Weevil; Winter Moth.
General considerations on the use of DDT against fruit pests, by H. Shaw, **1945,** IV, 138. **The formation of phosgene from DDT and related compounds,** by J. K. Eaton: reported evolution of phosgene on mixing DDT and copper oxychloride not confirmed, **1946,** III, 129. Absorption by leaves, **1947,** II, 43. Synergists for, **1950,** II, 44. Alessandrini method of estimating DDT deposits modified and

DDT–*continued*

used to estimate residues of DDT on bark, **1952,** II, 43. Schecter-Haller method for estimating small quantities of DDT, **1953,** II, 47.

'Death, The' — *see under* Functional disorders, 'The Death'.

Death's Head Hawk Moth — observations on, **1928-29-30** (S), III, 199.

Deblossoming — *see also under* Biennial bearing; Blossom thinning; Strawberries, deblossoming.
effect on growth of apple trees, **1951,** II, 26; **1952,** II, 22.

Defeathering — effect on weight, girth, and development in apple trees, **1925,** II, 38; **1927,** II, 38. **Experiments upon the removal of lateral growths on young apple trees in summer: the effect on stem and root development,** by R. G. Hatton and J. Amos: defeathering in summer of stems of young apple trees affects tree weight and girth adversely and restricts root development; in general, trees allowed to feather in the nursery show some slight gain in growth the year after transplanting, **1925** (S), III, 38. Defeathering in plum incompatibility trials, **1947,** II, 22.

Deficiencies, mineral — *see under* Mineral deficiencies.

Defoliating sprays — *see under* Sprays, defoliating.

Defoliation — *see under* Biennial bearing.

Demonstration plots — *see under* Statistical studies.

Dendromyza sp. — *see under* Plum Cambium Miner.

Derocrepis rufipes — *see under* Flea beetles.

Derris — *see also under* Apple Blossom Weevil; Apple Fruit Moth; Apple Fruit Rhynchites; Apple Sawfly; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite; Black-bodied Sawfly; Black Currant Gall Mite; Clay-coloured Weevil; Codling Moth; Common Gooseberry Sawfly; Earwigs; Pear Slug Sawfly; Plum Sawfly; Raspberry Beetle; Strawberry Rhynchites; Tortricid moths.
The use of derris root as an insecticide, by W. Steer: its value in control of specific pests, **1935,** IV, 225. Substitutes for derris, **1942,** II, 26.

Design, experimental — *see under* Statistical studies.

Dewberries–

- propagation — *see under* Propagation, dewberries.
- varieties–
  - collections, trials, and classification — notes on, **1932,** II, 33; **1935,** II, 79; **1936,** II, 85; **1937,** II, 100; **1938,** II, 98. **Cultivated blackberries, dewberries, and hybrid berries: a progress report,** by A. Beryl Beakbane, **1932,** III, 68.
- virus diseases — *see under* Rubi, virus diseases.

Diataraxia oleracea — *see under* Tomato Moth.

2,4-Dichloro-phenoxy-acetic acid (2,4-D or DPOA) — *see under* Fruit drop (**1947,** III, 108).

Didymella applanata — *see under* Cane Blight, raspberries; Raspberry Cane Midge; Spur Blight, raspberries.

Dieback–

- apples — *see under* Apples, dieback.
- blackberries — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.
- black currants — *see under* Black currants, dieback.

Dieback–*continued*

cherries — *see under* Bacterial Canker, cherries.

loganberries — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.

mulberries — *see under* Canker and Dieback, mulberries.

plums — *see under* Bacterial Canker, plums.

raspberries — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi; Raspberries, dieback.

walnuts — *see under* Walnuts, dieback.

Dieldrin — *see under* Codling Moth.

Dinitrocaprylphenyl crotonate (DNOPC) — *see under* Apple Mildew; Codling Moth.

Dinitrocresol (DNOC) — *see under* Winter washes, petroleum oil.

Dinoseb (DNBP) — studies on, **1952,** II, 42, 44.

Diphenyl sulphone — *see under* Fruit Tree Red Spider Mite.

Diplocarpon earlianum — *see under* Leaf Scorch, strawberries.

Dipterous egg masses — on apple shoots, **1952,** III, 150.

Disbudding — *see under* Pruning, apples (**1948,** II, 26, III, 55; **1951,** IV, 199; **1953,** IV, 200).

Diseases, fruit and plant — *see also under* common names of diseases (for full list of names appearing in Index see pages 169-175), and under individual fruits and plants.
Notes on plant diseases, by H. Wormald and/or R. V. Harris, **1924,** III, 110; **1925** (S), III, 75; **1926-27** (S), III, 75; **1928-29-30** (S), III, 123; **1931,** III, 47; **1932,** III, 81; **1933,** III, 142; **1934,** III, 142; **1935,** III, 142; **1936,** III, 187; **1937,** III, 181; **1938,** III, 167; **1939,** III, 58; **1940,** III, 55; **1941,** III, 40. Notes on control problems, **1947,** II, 38; **1948,** II, 40; **1949,** II, 41; **1950,** II, 40. **Some fruit diseases seen on survey in Kent,** by H. B. S. Montgomery and M. H. Moore: gives account of Apple Scab, Pear Scab, Apple Canker, Armillaria Root Rot, waterlogging, Brown Rot, Blossom Wilt and Canker, Bacterial Canker of cherries and plums, Cane Blight of raspberries, and Leaf Spot of currants, **1942,** IV, 104.

Dispersible sulphur — *see under* Sulphur, dispersible.

Ditton Laboratory, collaboration with — *see under* Storage, general.

Ditula angustiorana — *see under* Tortricid moths.

Ditylenchus dipsaci — *see under* Stem and Bulb Eelworm.

DNBP — *see under* Dinoseb.

DNC (Dinitrocresol) — *see under* Winter washes, petroleum oil.

DNC sodium salt — *see under* Blossom thinning.

DNOC (Dinitrocresol) — *see under* Winter washes, petroleum oil.

DNOPC — *see under* Dinitrocaprylphenyl crotonate.

Dock Sawfly — observations on, **1936,** III, 227; **1951,** III, 157; **1953,** III, 165.

Doralis idaei — *see under* Raspberry Aphid.

Dorcus parallelopipedus — *see under* Beetles, general.

Dormancy, delayed — exhibited in new consignment of clonal 'Kentish' cherry rootstock and maiden trees of sweet varieties worked on this from Victoria, Australia; delayed dormancy usually associated with lack of winter chilling, **1947,** II, 21.

Double-shield budding, pears — *see under* Double-working, pears.

Double-working– *see also under* Grafting; Stem-building.

apples notes on, **1918-19,** 12; **1919-20,** 5; **1920-21,** 6; **1922,** 28; **1923,** II, 83; **1924,** II, 38; **1925,** II, 38; **1926,** II, 36; **1929,** II, 35; **1930,** II, 41; **1931,** II, 24; **1932,** II, 26; **1935,** II, 33; **1938,** II, 44. Existence of an influence of the intermediate stem variety on the vigour of the second scion and time of ripening is clearly demonstrated, **1936,** II, 37. Stem-builder stems sometimes reduced rootstock influence measurably, **1937,** II, 45. **Note on the effect of the variety of stock used to provide the intermediate stem-piece in some double-worked apple trees,** by M. C. Vyvyan: scion was Stirling Castle in all trees and stock M.XII, intermediate M.II in some cases and M.XII in others, propagated in 1927; trees with M.II intermediate produced progressively more fruit buds than those with M.XII intermediate, and by 1936 the number per tree and per metre wood had become significantly greater, **1938,** III, 148.

cherries notes on, **1945,** II, 18; **1946,** II, 18; **1947,** II, 22; **1948,** II, 25; **1949,** II, 22; **1950,** II, 22; **1951,** II, 27; **1952,** II, 22.

general notes on, **1931,** II, 24.

pears notes on, **1919-20,** 5; **1920-21,** 6; **1922,** 28; **1923,** II, 83; **1926,** II, 36; **1927,** II, 38; **1929,** II, 35; **1930,** II, 41; **1932,** II, 26; **1935,** II, 33; **1936,** II, 37; **1937,** II, 45; **1941,** II, 15; **1944,** II, 18; **1946,** II, 18; **1947,** II, 22; **1949,** II, 22; **1950,** II, 22; **1951,** II, 27; **1952,** II, 22. **Experiments with double-worked pears on quince stocks,** by N. H. Grubb: variety used as intermediate in double-working has a distinct influence on vigour of second scion and probably an influence on the age at which trees begin to bear fruit, **1925** (S), III, 11. Orange Bergamotte, a vigorous variety, has dwarfing influence as an intermediate, **1938,** II, 44. **Studies in nursery technique: the production of double-worked pear trees,** by R. J. Garner and D. H. Hammond: Williams' Bon Chrétien was unsatisfactory when worked directly onto certain quince stocks and should be double-worked, **1939,** IV, 84. Trees of Williams' Bon Chrétien double- and single-worked on quince were successfully bridge-grafted and inarched, and after one season's growth there were no measurable differences traceable to the manipulation, **1942,** II, 15. **Double-working and bridging incompatible combinations of pear and quince,** by R. J. Garner, **1943,** IV, 80. Williams' Bon Chrétien on quince with unions bridged when two years old have grown and cropped as well as double-worked ones, **1949,** II, 22. Double-worked pear trees showing symptoms of incompatibility, **1951,** II, 25. **Double-working pears at budding time,** by R. J. Garner: description of double-shield budding, **1952,** IV, 174.

plums notes on, **1946,** II, 18; **1949,** II, 22. Trees of Victoria over President stems have cropped rather more heavily and ripened two weeks earlier than adjacent trees of Victoria over Victoria; no difference between feathered and clean-trunk trees, **1947,** II, 22. Victorias on Myrobalan B with intermediate stems of President continue to show ill health, **1948,** II, 25.

Downy Mildew–

hops *see under* Hop Downy Mildew.

onions *see under* Onion Downy Mildew.

parsnips *see under* Parsnip Downy Mildew.

DPOA *see under* 2,4-Dichloro-phenoxy-acetic acid.

DPS *see under* Diphenyl sulphone.

Draves test determines time required for a standard textile to sink in an aqueous solution of the wetting agent, **1950,** IV, 214.

Drought — *see also under* Water.
effect on Branch Blister—*see under* Branch Blister.

Drought Spot — *see under* Functional disorders, Drought Spot.

Dung beetles — *see under* Beetles, dung.

,, mulching — *see under* Mulching, dung.

Dunstan, M. J. R., O.B.E., M.A., F.R.S.E. — an appreciation, **1938,** 14.

Dustywings (lacewings) — *see also under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.
observations on Lacewing Fly (*Coniopteryx tineiformis*), **1945,** III, 95. Effect of spraying materials on *Conwentzia pineticola* End., **1952,** III, 142.

Dwarf disease — *see under* Rubus Stunt.

,, Lateral Scorch, Rubi. — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.

,, pyramids — *see under* Intensive fruit culture, dwarf pyramids.

Dysstroma truncata — *see under* Common Marbled Carpet Moth.

E605 — *see under* Parathion.

Early Prolific hop — *see under* Hops, Early Prolific.

Earwigs — observations on *Apterygida albipennis*, **1941,** III, 50. Thorough spraying with lead arsenate effective in checking Common Earwig but not derris dusts or nicotine sprays, **1942,** III, 67. 5% DDT dust to the ground under trees and to cracks in walls prevents attack on fruit by Common Earwig, **1948,** III, 106.

East Malling Research Station, general — alphabetical list of Members, **1926,** 97; **1927,** 91; **1928,** 147; **1929,** 109; **1930,** 141; **1934,** 249. **The experimental plantations at East Malling,** by H. B. S. Montgomery, **1948,** IV, 119. **The soils of East Malling Research Station,** by B. S. Furneaux, **1953,** III, 60. **The experimental plantations at East Malling,** by J. H. Walker, **1953,** IV, 189. **Forty years' work at East Malling,** by J. H. Walker, **1953,** IV, 223.

Eccoptogaster mali — *see under* Large Fruit Bark Beetle.

,, *rugulosus* — *see under* Fruit Bark Beetle.

Ecological community — effect of mineral nutrition on—*see under* Mineral nutrition.

Eelworms — *see under* Hop Eelworm; Leaf and Bud eelworms; Meadow Nematode; Root Lesion nematodes; Sodium hypochlorite; Stem and Bulb Eelworm; Vinegar Eelworm.

Elaeagnus, a leaf spot of — notes on, **1925** (**S**), III, 84.

Elements in plants, estimation of — *see under* Analysis.

Ellison's Orange apple, Green Blotch — *see under* Frost damage investigations, apples.

Elsinoë veneta — *see under* Cane Spot.

Enarmonia — *see under Ernamonia.*

Enicmus transversus — *see under* Beneficial insects and mites, pollinators.

Entodecta pumila — *see under* Raspberry Leaf-mining Sawfly.

Entomology Section — general review of research work, **1923,** II, 80; **1924,** II, 139; **1925,** II, 73; **1926,** II, 63; **1927,** II, 67; **1928,** II, 109; **1929,** II, 79; **1930,** II, 101; **1931,** II, 41; **1932,** II, 44; **1933,** II, 52; **1934,** II, 68; **1935,** II, 62; **1936,** II, 68; **1937,** II, 80; **1938,** II, 80; **1939,** II, 30; **1940,** II, 25; **1941,** II, 23; **1942,** II, 24; **1943,** II, 25; **1944,** II, 28; **1945,** II, 36; **1946,** II, 38; **1947,** II, 40; **1948,** II, 42; **1949,** II, 43; **1950,** II, 42; **1951,** II, 43; **1952,** II, 39; **1953,** II, 43.

Entomosporium maculatum — *see under* Leaf Blight, medlars; Leaf Blight, pears; Leaf Blight, quinces.

Environment — effect on fruit tree—*see under* Amos Memorial Lectures.

Ephestia kühniella — providing non-seasonal egg material for testing of ovicides, **1946,** II, 41.

Epipolaeus caliginosus — *see under* Hop Root Weevil.

Equisetum — *see under* Weedkillers.

Erannis leucophaeris — *see under* Spring Usher Moth.

Eriophyes avellanae — *see under* Nut Gall Mite.

,, *essigi* — *see under* Blackberries, Red Berry Disease.

,, *ficus* — *see under* Fig Mite.

,, *gracilis* — *see under* Raspberry Leaf and Bud Mite.

,, *löwi* — *see under* Gall mites.

,, *piri* var. *arianus* — *see under* Gall mites.

,, *ribis* — *see under* Black Currant Gall Mite.

Eriosoma lanigerum — *see under* Woolly Aphid.

,, *lanuginosum* — *see under* Pear Woolly Aphid.

Ermine Moth, Small — *see under* Small Ermine Moth.

Ernarmonia formosana — *see under* Cherry-bark Tortrix Moth.

,, *funebrana* — *see under* Plum Fruit Moth.

,, *pomonella* — *see under* Codling Moth.

Erwinia carotovora — *see under* Soft Rot, turnips.

Erysiphe polygoni — *see under* Pea Mildew.

Erythroneura pruni — *see under* Leafhoppers, plums.

Espaliers — *see under* Intensive fruit culture, espaliers.

Ethyl acetate fraction — notes on, **1949,** II, 38; **1950,** II, 35; **1952,** II, 31.

Euacanthus interruptus — *see under* Hop Leafhopper.

Eucosma penkleriana — *see under* Nut Bud Moth.

Eulecanium coryli — *see under* Brown Scale.

Eupista nigricella — *see under* Apple and Plum Casebearer.

Eupithecia assimilata — *see under* Pug Moth.

Eupteryx stellulata — *see under* Cherry Leafhopper.

Euproctis phaeorrhoea — *see under* Brown-tail Moth.

European Gooseberry Mildew — *see under* Gooseberry Mildew, European.

Eutypa lata var. *ribis* — *see under* Black currants, dieback.

Euzetes lapidarius — *see under* Beetle Mite.

Exoascus cerasi — *see under* Witches' Brooms.

,, *minor* — *see under* Cherry Leaf Curl.

Experimental design — *see under* Statistical studies.

,, Farm — *see under* Farm, Experimental.

,, glasshouses — *see under* Glasshouses, Experimental Farm.

,, nurseries — *see under* Nurseries and stoolbeds, Experimental Farm.

,, plantations — *see under* Apples, cropping; East Malling Research Station, general; Farm, Experimental, reports; Pears, cropping.

External contacts — *see under* Scientific Liaison Section.

Eye estimates, crop weights — *see under* Statistical studies.

Eye Rot, apples — Worcester Pearmain particularly susceptible; fungus considered to be *Nectria galligena*, **1937,** III, 183.

Fabraea maculata — *see under* Leaf Blight, medlars; Leaf Blight, pears; Leaf Blight, quinces.

False Crinkle, strawberries — *see under* Strawberries, Crinkle, False.

False Tarnished Plant Bug — observations on, **1951,** III, 158.

Farm, Experimental, reports — **1922,** 15; **1923,** I, 15, with details of lay-out of plots; **1924,** I, 29; **1925,** I, 31; **1926,** I, 29; **1927,** I, 31; **1928,** I, 27; **1929,** I, 25; **1930,** I, 31; **1931,** I, 11; **1932,** I, 11; **1933,** I, 13; **1934,** I, 17; **1935,** I, 15; **1936,** I, 13; **1937,** I, 13; **1938,** I, 15; **1939,** I, 13; **1940,** I, 11; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 11; **1946,** I, 11; **1947,** I, 15; **1948,** I, 17; **1949,** I, 15; **1950,** I, 15; **1951,** I, 17; **1952,** I, 15; **1953,** I, 17.

Feathered Thorn Moth — observations on, **1928-29-30** (S), III, 197; **1945,** III, 93.

Ferrous sulphate — *see under* Spray damage.

Fertilizers — *see under* Manuring.

Fibres — *see also under* Histological investigations.
length of in stems of apple and plum, in relation to mechanical strength, **1950,** II, 21; **1951,** II, 26.

Field experiments — *see under* Statistical studies.

,, trials, Statistics — *see under* Statistical studies.

Fig Mite — observations on, **1938,** III, 185.

Filberts, Brown Rot — *see under* Brown Rot, cobnuts and filberts.

Flat Bug — observations on, **1941,** III, 49.

Flat-celled Shot Borer — *see under* Small Shot Borer.

Flat Scarlet Mite — observations on, **1928-29-30** (S), III, 189; **1946,** III, 128.

Flax Flea Beetle — observations on, **1952,** III, 146.

Flea beetles — *see also under* Flax Flea Beetle; Hop Flea Beetle; Large Flax Flea Beetle; Mangold Flea Beetle; Raspberry Flea beetles.
observations on *Derocrepis rufipes* L., **1937,** III, 203.

Fluffy Tip, hops — notes on, **1939,** II, 35; **1941,** III, 43; **1949,** IV, 177. Attempts to determine if graft-transmissible, **1942,** II, 29.

Foam — use in frost damage investigations, **1947,** II, 24.

Fomes Collar Rot — notes on, **1936,** III, 190; **1937,** III, 184.

,, Disease — attacking plum and *Prunus* sp. in hedgerow, **1926-27** (S), III, 82. Attacking Victoria and Bush Plum, **1934,** III, 146. Attacking cherries, **1941,** III, 41.

Fomes pomaceus — *see under* Fomes Disease.

,, *ribis* — *see under* Fomes Collar Rot.

Food production — **Making the best use of water in food production,** by W. S. Rogers, **1940,** IV, 82.

Forest Bug — observations on, **1946,** III, 128.

Forficula auricularia — *see under* Earwigs.

Formalin — *see under* Verticillium Wilt, hops; Walnuts, Graft Disease.

Forsythia Bacterial Blight — notes on, **1935,** III, 145.

Fragaria chiloensis — *see under* Strawberries, *Fragaria chiloensis.*

,, *vesca* — *see under* Strawberries, *Fragaria vesca.*

,, *virginiana* — *see under* Strawberries, *Fragaria virginiana.*

Framework grafting — *see under* Grafting.

French beans, Leaf Spot — *see under* Leaf Spot, French beans.

Frog Hopper — *see under* Red and Black Froghopper.

Froghopper, Hop — *see under* Hop Leafhopper.

„ Red and Black — *see under* Red and Black Froghopper.

Frost damage investigations– — *see also under* Katabatic winds.

apples — notes on, **1938,** II, 53; **1939,** II, 21; **1940,** II, 16; **1941,** II, 16; **1942,** II, 15; **1944,** II, 19, 21; **1946,** II, 19; **1947,** II, 24; **1948,** II, 28; **1949,** II, 25, III, 69; **1950,** II, 23; **1951,** II, 28; **1952,** II, 24; **1953,** II, 27, 28. **Low temperature injury to fruit blossom. I. On the damage caused to fruit blossom by varying degrees of cold,** by Caroline P. Field: temperatures at or below 29° F. caused damage proportional to the duration of exposure; time of thawing unimportant, but wet blossom at similar temperatures was affected sooner than dry blossom; of substances injected into shoots and flowers of blackberry, only glycerin reduced susceptibility, **1938,** III, 127. No correlation between damage to flowers and treatment with lime-sulphur spray at 1%, 2½%, and 5%; glycerin-sprayed flowers less severely damaged by low temperatures than unsprayed ones, **1940,** II, 16. Suggestion that spur thinning induced greater susceptibility to frost damage, **1941,** II, 15. 79% of blossoms whose spur leaves were damaged were injured by frost, as against 45% of blossoms whose spur leaves were undamaged, **1941,** II, 16. **Low temperature injury to fruit blossom. II. A comparison of the relative susceptibility and effect of environmental factors on three commercial apple varieties,** by Caroline P. Field: comparison made on Cox, Bramley's Seedling, and Worcester Pearmain, **1941,** III, 29. Flowers most easily injured when in green-bud stage, but temperatures above 29° F. caused no injury; humidity of air had little effect, but wet flowers suffered more than dry ones, **1942,** II, 15. Intensive work on frost damage restarted using artificially frozen apple blossoms, **1946,** II, 19. **'Green Blotch', an abnormal tissue of apple fruits, probably associated with spring frost,** by Irena Modlibowska: variety most affected is Ellison's Orange, **1946,** III, 62. In apples and pears damage to young shoots and spurs shown by blackening or browning of the pith, but discoloration did not prevent grafts from callusing or taking normally; foam was useless as protector of blossoms against frost under conditions of these tests, **1947,** II, 24. **Winter injury to apple shoots and spurs in relation to previous cropping,** by L. B. Singh: shoots from trees in the 'off' year were more injured than those from trees in the 'on' year; injury to shoots negatively correlated with length and positively with diameter, and bourses more injured on the 'on' than on the 'off' year trees, **1947,** III, 78. Flowers freezing at a certain temperature were killed, but flowers super-cooled to same temperature were undamaged, while single detached flowers and flowers on detached spurs super-cooled more and were damaged less than flowers attached to tree, **1948,** II, 28. Flowers tested to find any correlation between frost resistance of growing shoots at seedling stage and flowers at maturity, **1949,** II, 25. Water sprinkling tried on dwarf pyramid trees at Bradbourne, **1949,** II, 26. **Low temperature injury to fruit blossom. III. Water sprinkling as an anti-frost measure,** by W. S. Rogers and Irena Modlibowska: continuous sprinkling of fruit tree blossoms with water during spring frosts can protect from freezing, **1949,** III, 63.

apricots — notes on, **1947,** II, 24; **1948,** II, 28.

blackberries — notes on, **1928-29-30** (S), III, 137. **Low temperature injury to fruit blossom. I. On the damage caused to fruit blossom by varying degrees of cold,** by Caroline P. Field, **1938,** III, 127.

Frost damage investigations–*continued*

black currants — notes on, **1949,** III, 70; **1950,** II, 24; **1951,** II, 28; **1952,** II, 24; **1953,** II, 28. Seabrook's Black consistently less damaged than other varieties, **1950,** II, 24. **Preliminary studies of spring frost resistance of black currant varieties,** by Irena Modlibowska and J. P. Ruxton: Seabrook's Black suffered less than other varieties, but none was markedly resistant, **1952,** III, 67.

cherries — notes on, **1944,** II, 19; **1947,** II, 24; **1948,** II, 28; **1949,** III, 70; **1952,** II, 24; **1953,** II, 28.

general — notes on, **1942,** II, 15; **1949,** II, 25; **1950,** II, 24; **1951,** II, 28; **1952,** II, 24; **1953,** II, 27. Frost damage survey, **1935,** II, 38. **Spring frosts at East Malling, 1915-35,** by T. N. Hoblyn: damage to fruit of economic importance due to unfavourable weather conditions during this period has occurred in six seasons out of twenty-one, **1935,** III, 124. Effect on fruit pests of severe frost of 16th-17th May, **1935,** III, 168. **Investigations of frost damage to horticultural crops, with suggestions for future work,** by W. A. Bane: as a result of great frost of 16th-17th May, 1935, **1935,** IV, 220. Glycerin and growth-retarding substances used, **1939,** II, 21. **Winter injury in 1947,** by Irena Modlibowska and H. B. S. Montgomery, **1947,** IV, 165. **A fog in March—a frost in May?,** by A. P. Preston: no support for this theory, **1947,** IV, 169. **Frost damage to fruit: a note on the present position of research in England,** by W. S. Rogers, **1948,** IV, 128. **Low temperature injury to fruit blossom. III. Water sprinkling as an anti-frost measure,** by W. S. Rogers and Irena Modlibowska, **1949,** III, 63. **Notes on frost damage symptoms on fruits in 1949,** by Irena Modlibowska and Elizabeth M. Glenn, **1949,** III, 69. **The effect of netting and hessian anti-frost screens and of brick walls on air temperatures,** by W. S. Rogers and A. Beryl Beakbane: light hessian gave useful protection when hung over wall-trained trees at night, **1950,** III, 60. **The effect of certain growth-promoting substances upon frost-damaged apple flowers,** by Irena Modlibowska, **1950,** III, 65. None of the growth-regulating substances used stimulated recovery of critically frost-damaged flowers or parthenocarpic fruit development, **1951,** II, 28. **Protection from spring and autumn frosts by continuous water sprinkling,** by W. S. Rogers, **1951,** IV, 197. Special fruit plot planted for frost studies on lowest-lying land; details of rotary sprinklers for frost protection; effect of growth inhibitors on frost susceptibility of certain fruit trees, **1952,** II, 24. **Some experiments on 'washing off' the hoar frost,** by Irena Modlibowska, **1952,** III, 73.

gooseberries — notes on, **1952,** II, 24.

peaches — notes on, **1947,** II, 24.

pears — notes on, **1928-29-30** (S), III, 123; **1941,** II, 16; **1947,** II, 24; **1948,** II, 28; **1949,** II, 25, III, 70; **1951,** II, 28; **1952,** II, 24; **1953,** II, 27.

plums — notes on, **1935,** II, 29; **1944,** II, 19; **1947,** II, 24; **1948,** II, 28; **1949,** III, 70; **1952,** II, 24.

quinces — notes on, **1949,** III, 70.

raspberries — notes on, **1928-29-30** (S), III, 137; **1949,** II, 25; **1950,** II, 24, 51; **1951,** II, 28; **1952,** II, 24; **1953,** II, 27. Malling Enterprise again among the least damaged, and Malling Landmark the most, **1950,** II, 24. **Preliminary studies on the resistance of raspberry varieties to spring frosts,** by J. P. Ruxton and Irena Modlibowska: none of the varieties tested was markedly resistant and open flowers were more damaged than buds, **1953,** III, 111.

Frost damage investigations–*continued*

strawberries — notes on, **1943,** II, 18; **1948,** II, 28; **1949,** II, 25, III, 70; **1950,** II, 24; **1951,** II, 28; **1952,** II, 24. Good crop harvested where paper placed over fruit on evening preceding frost; temperature differences recorded at 1 inch above straw and bare ground were less than in previous trial, **1944,** II, 21. Importation of strawberry varieties from U.S.A. with flowers reputed to withstand −15° C., **1949,** II, 25. Trial of time of strawing strawberries in relation to frost damage, **1949,** II, 29, IV, 164. Newly imported American strawberry varieties were less damaged than English ones, of which Royal Sovereign was least damaged and Madame Lefebvre the most, **1950,** II, 24.

walnuts — *see under* Walnuts, general.

Fruit Bark Beetle — *see also under* Large Fruit Bark Beetle.
observations on, **1934,** III, 170; **1944,** III, 79; **1945,** III, 91; **1947,** III, 135; **1950,** III, 141.

Fruit breeding — *see under* Breeding.

,, bud differentiation — *see under* Apple development; Biennial bearing.

,, colour — *see under* Farm, Experimental, reports (as regards fruit from Experimental Farm); Fruit thinning; Manuring, apples; Plant injection (**1934,** II, 57); Pruning, apples; Rootstocks, apple (**1925** (S), III, 16; **1932,** III, 55; **1934,** IV, 227); Statistical studies.

,, diseases — *see under* Diseases, fruit and plant.

,, drop — *see also under* NAA; Pears, blossom, non-setting of.
notes on, **1940,** II, 16, 22; **1941,** II, 20; **1944,** II, 24; **1947,** II, 32; **1951,** II, 34; **1953,** II, 33. **Reduction of the pre-harvest drop in apples by spraying with a growth substance,** by M. C. Vyvyan: use of α-naphthalene acetic acid; drop of mature fruit in Cox, Worcester Pearmain, and Beauty of Bath reduced by spraying trees a few weeks before picking, **1940,** III, 46. Sprays containing 2·5 or 5 p.p.m. of NAA may reduce significantly the drop of fruit during the last few weeks before picking in Cox, Worcester Pearmain, and Beauty of Bath; activity of substance not reduced when mixed with lime-sulphur or Bordeaux mixture sprays, when tested by coleoptile test, **1941,** II, 20. **Further note on the reduction of pre-harvest drop in apples by use of dilute sprays of alpha-naphthalene acetic acid,** by M. C. Vyvyan: on 28th August, when fruit normally picked, trees sprayed with 5 p.p.m. and 10 p.p.m. still retained 83·4% and 84·2% of their fruit respectively, while controls retained 67·8%, **1941,** III, 38. NAA at 5 or 10 p.p.m. applied three weeks before picking; by picking time unsprayed trees had lost a bushel through drops, while sprayed trees only lost half a bushel; spray tried on Conference pears with very marked and significant results, but spray only acted on good fruit, diseased fruit falling as before and representing most of the drop from the sprayed trees; NAA had much the same effect as its acetamide, **1942,** II, 20. **Sprays to control pre-harvest drop of fruit,** by M. C. Vyvyan: 20% increase in crop of Conference pear by spraying trees with 4 p.p.m. NAA three weeks before time of picking; similarly with Bramley's Seedling, and also with its acetamide at 6 p.p.m. five weeks before picking, **1942,** III, 47. Conference pear sprayed with 4 p.p.m. NAA lost 2% of fruit while controls lost 18%; similarly with Bramley's Seedling, Worcester Pearmain, and Cox, **1943,** II, 21. **The influence of different pollens on the growth and development of the fruit in apples and pears. II. Fruit size and seed content in relation to fruit drop,** by H. M. Tydeman, **1943,** III, 31—*see under* Pollination and pollen influence. **Further trials**

with sprays to control pre-harvest fruit drop, by M. C. Vyvyan, **1943,** III, 49. **Sprays to prevent pre-harvest drop of fruit,** by M. C. Vyvyan: recommendations for use of growth substances and varieties on which they have proved successful in commercial practice, **1944,** IV, 118. Trials and routine sprays for June and pre-harvest drops of fruits, **1945,** II, 27; **1946,** II, 29. Considerable control of June drop of Cox by 10 p.p.m. NAA on 1st July, **1946,** II, 30. **Use of sprays to control fruit drop, especially that of young fruit of Cox's Orange Pippin,** by M. C. Vyvyan and H. W. B. Barlow: heavy drop of young fruits in July largely controlled by spray of NAA applied on 1st July; effect of spray persisted for three months, and crop increased two- to three-fold, **1946,** III, 83. **Use of sprays to control fruit drop. II. Effect of adding naphthalene-acetic acid (NAA) to a routine June spray,** by M. C. Vyvyan and H. W. B. Barlow: sprays of NAA at 10 p.p.m. applied late in June greatly reduced June drop in Cox and increased the crop; NAA was as effective when added to a spray of lead arsenate or of dispersible sulphur as when applied alone; addition of NAA to summer petroleum gave inconclusive results, **1947,** III, 101. **Use of sprays to control fruit drop. III. Effect of 2,4-Dichloro-phenoxy-acetic acid and a related substance on fruit drop in Bramley's Seedling,** by M. C. Vyvyan and H. W. B. Barlow: sprays of 2,4-D produced appreciable reduction in drop whether applied in mid-June or in mid-August, but not recommended at present, **1947,** III, 108. **Use of sprays to control fruit drop. IV. Note on the after-effects of a naphthalene-acetic acid (NAA) spray on the ripening of stored Conference pears,** by M. C. Vyvyan, C. West, and H. W. B. Barlow: spray of NAA had no after-effect on storage behaviour of fruit of Conference pear, picked a week early, at the normal date, or a week later; late picking gave the best quality, **1947,** III, 111. NAA added to lead arsenate, lime-sulphur, or summer petroleum oil; control of June drop less marked, but a delay in picking resulted in heavy drop of fruit though improved fruit quality; spray of NAA controlled drop without affecting quality, **1948,** II, 35. **Use of sprays to control fruit drop. V. Effect of a naphthalene-acetic acid (NAA) spray, and of a delay in picking, on the rate of dropping and the storage behaviour of Cox's Orange Pippin apples,** by M. C. Vyvyan, C. West, and H. W. B. Barlow: fortnight's delay in picking greatly improved quality of Cox, but resulted in heavy drop of fruit, **1948,** III, 86. Control of June drop in Cox by growth substances—to determine best date of application, **1949,** II, 33. Effect of potassium sulphate on fruit drop in Cox, **1949,** II, 33; **1950,** II, 31. NAA spray applied to Cox early in May resulted in a temporary reduction in drop followed by heavy fall and a reduced final yield; when applied on 1st June considerable increase in yield resulted, **1950,** II, 30. **Use of sprays to control fruit drop. VI. Rain and the control of pre-harvest drop in Sunset apples,** by H. W. B. Barlow, **1950,** III, 108. **Use of sprays to control fruit drop. VII. Effect of season and date of spraying on control of June drop in Cox's Orange Pippin,** by M. C. Vyvyan and G. F. Trowell: NAA alone and with other sprays, **1950,** III, 111. **Use of sprays to control fruit drop. VIII. Further trials with NAA sprays on the apple variety Bramley's Seedling,** by M. C. Vyvyan and G. F. Trowell: addition of NAA to lime-sulphur and mercurated lead arsenate sprays applied in May and June had no appreciable effect on subsequent fruit drop in Bramley's Seedling, **1951,** III, 108. **Use of sprays to control fruit drop. IX. Further trials of the effects of delay in picking and of NAA sprays on fruit drop in Cox's Orange Pippin,** by M. C. Vyvyan

Fruit drop–*continued*

and G. F. Trowell: sprays of NAA at 10 p.p.m. applied three weeks before normal picking considerably reduced drop, **1951,** III, 112.

,, flies — *see under* Mediterranean Fruit Fly.

,, garden — *see under* Intensive fruit culture.

,, grading — *see under* Marketing.

,, growing, developments in — *see under* Amos Memorial Lectures.

Fruiting, hastening of — *see under* Juvenile phase.

Fruit marketing — *see under* Marketing.

,, planting — *see under* Planting.

,, quality — *see also under* Apples, keeping quality; Farm, Experimental, reports (as regards fruit from Experimental Farm); Fruit colour; Fruit drop; Fruit size; Irrigation; Marketing, fruit; Storage.
Influence of maturity on quality of Conference pear, **1932,** III, 51.

,, russetting — *see also under* Spray damage.
notes on, **1931,** II, 39; **1932,** II, 41; **1933,** II, 49; **1934,** II, 61.

,, size — *see also under* Farm, Experimental, reports (as regards fruit from Experimental Farm); Fruit thinning; Irrigation; Manuring; Pollination and pollen influence; Pruning; Statistical studies.
notes on, **1942,** II, 15; **1949,** I, 15; **1951,** I, 17; **1952,** I, 15, 16, 17. Leaf scorch reduces fruit size, **1924,** III, 41. Rootstock effect, apples, **1925** (S), III, 16; **1934,** IV, 227. Fruit size and pollination in pear, **1940,** III, 43.

,, soil survey — *see under* Soil surveys.

,, splitting– — *see also under* Farm, Experimental, reports (fruit from Farm).

apples — Orleans Reinette badly cracked, **1928-29-30** (S), III, 124. **Cracking of apples,** by A. P. Preston: due to weather conditions, **1945,** III, 75. CPBS spray associated with splitting of Worcester Pearmain a month or more after date of application, **1952,** II, 43.

cherries — notes on, **1949,** II, 34. Use of sprays of calcium hydroxide and oil-wax emulsions, but results disappointing, **1950,** II, 32.

plums — Ontario plum, **1948,** II, 26. Use of sprays containing calcium salts to control, **1948,** II, 36. Splitting induced by immersing plums in distilled water for one, two, or four hours was reduced to half when treated with calcium hydroxide at concentrations of 250 or even 125 p.p.m., **1949,** II, 34. Use of sprays of calcium hydroxide and oil-wax emulsions against fruit split, **1950,** II, 32. Utility, though considered a bad splitter, unaffected this season, **1951,** II, 35.

,, storage — *see under* Storage.

,, Surface-eating Tortrix — *see under* Tortricid moths.

,, thinning– — *see also under* Blossom thinning.

apples — notes on, **1927,** II, 40; **1928,** II, 38; **1931,** II, 25; **1937,** II, 46; **1938,** II, 46; **1945,** II, 19. In experiment on Duchess' Favourite unthinned trees, which had cropped heavily in previous year, yielded only a handful of very large fruits per tree but thinned trees again carried useful crops with good sized fruits, **1946,** II, 19. In long term apple thinning trial begun in 1945 on 16-year-old Duchess' Favourite on M.IX thinned annually by leaf count method, the unthinned control trees cropped heavily in alternate years, while thinned trees carried a good crop annually; light thinning is little better than no thinning, but the later the thinning, the more drastic it must be, **1947,** II, 23. Thinning lightly to one fruit to 10 leaves reduced the biennial tendency slightly, thinning to one fruit to 20 to 30 leaves almost completely eliminated the

Fruit thinning–apples–*continued*

biennial habit, but very drastic thinning reduced crop seriously; early thinning, i.e. 6 weeks after petal-fall has consistently given more fruit buds for the following year than later thinning, i.e. after so-called June drop, **1948,** II, 26. Thinning trial allowing one fruit to every 10, 20, or 30 leaves compared with unthinned trees for this year gave no differences between thinning treatments, **1949,** II, 24. Thinning trial using leaf count method concluded, **1951,** II, 28. No advantageous effects obtained with use of NAA for thinning fruits and caution needed in this country in using this method, **1952,** II, 30. Effect of thinning on regularity of cropping of Duchess' Favourite persisted for two seasons after the completion of the trial, **1953,** II, 26. NAA had no effect on thinning young fruits of Miller's Seedling, **1953,** II, 33.

gooseberries — notes on, **1932,** II, 34; **1933,** II, 41; **1934,** II, 45; **1935,** II, 43; **1936,** II, 48; **1937,** II, 58; **1938,** II, 56.

plums — proportion of fruit of marketable size increased by thinning, **1926,** II, 37. **An experiment in the thinning of Victoria plums,** by A. C. Painter: an extended account of the following, **1928-29-30 (S),** III, 74. **An experiment in plum thinning,** by A. C. Painter: a 1-year experiment on thinning Victoria plums gave a definite increase in size of fruit on the thinned trees, and a definitely higher net return for the fruit in spite of a much lower aggregate yield; most of the crop from the unthinned trees consisted of low grade fruit of little value; wind damage was almost negligible in the case of the thinned trees and considerable in the case of the unthinned, **1930,** IV, 68. Victoria plums thinned to 1 or 2 inches apart but in neither case was thinning sufficient, **1936,** II, 39. **A further experiment in thinning the fruit of Victoria plums,** by A. C. Painter and Barbara L. Wates: trees with fruit thinned to 2 inches apart produced considerably more fruit of large size and less fruit of small size than trees with fruit thinned to 1 inch; fruit from the more heavily thinned trees matured earlier than that from the lightly thinned, **1938,** III, 139. Notes on in light of recent research, **1939,** IV, 81. Ontario plum thinning trial, **1948,** II, 26; **1949,** II, 24.

Fruit Tortricid moths — *see under* Tortricid moths.

,, tree(s), general — **The choice of young fruit trees,** by R. G. Hatton, J. Amos, and N. H. Grubb: discusses apples, pears, and plums, **1924,** III, 93. **A method of converting unprofitable fruit trees,** by R. J. Garner, **1933,** III, 103. **The rapid conversion of unprofitable fruit trees by grafting,** by R. J. Garner, **1935,** IV, 204. **Feeding the fruit tree—new light on an old subject,** by N. B. Bagenal, **1940,** IV, 87. **A method for the estimation of insect populations on fruit trees,** by Elsie Collyer, **1950,** III, 148—*see under* Insect populations. **Virus diseases and the propagation of fruit trees,** by A. F. Posnette, **1952,** IV, 179.

,, Tree leafhoppers — *see under* Leafhoppers.

,, ,, Red Spider Mite–general — observations on, **1925,** II, 73; **1926,** II, 63; **1927,** II, 67; **1928,** II, 109; **1929,** II, 79; **1930,** II, 101; **1931,** II, 41, III, 52; **1932,** II, 44; **1933,** II, 52, III, 177; **1934,** II, 61, 68; **1936,** III, 222; **1942,** III, 67; **1943,** III, 63; **1944,** II, 28; **1945,** II, 36; **1946,** II, 38; **1948,** II, 42; **1949,** II, 43, 47; **1950,** II, 42; **1951,** II, 43, 47, III, 160; **1952,** II, 39, 42, 43; **1953,** II, 35, 43, 48. Plant Protective Chemistry Section notes, including many references to chemicals not specifically indexed, **1941,** II, 25; **1944,** II, 30; **1945,** II, 40; **1946,** II, 42; **1947,** II, 43; **1948,** II, 45, 46; **1949,** II, 47; **1950,** II, 46; **1951,** II, 46, 47; **1952,** II, 42, 43; **1953,** II, 48. On apples, plums, pears, and hops;

Fruit Tree Red Spider Mite–general–*continued*

lime-sulphur most effective spray, but not 100%, **1925** (S), III, 157. Notes on control measures, **1926-27** (S), III, 161. **The Fruit Tree Red Spider (*Oligonychus ulmi* C. L. Koch),** by A. M. Massee: general account, **1928,** IV, 116. Spraying trials against, **1929,** II, 79. **The control of the Fruit Tree Red Spider on plum,** by A. M. Massee: where tar distillate spray used, Fruit Tree Red Spider increases; controlled by spray with lime-sulphur 1 to 99 water plus 1 lb. gelatine about two weeks after blossom fall, **1929,** IV, 85. Effect of scab sprays on, **1932,** III, 90. Attack less on fertilizer injected trees, **1934,** III, 135. Damage to raspberries and Morello cherries, **1934,** III, 167. Evidence obtained that adult Fruit Tree Red Spider can be spread from tree to tree by wind, **1939,** II, 33. 'Mangle' or 'leaf imprint' technique used for recording results of spraying trials, **1945,** II, 36. Attack on trees sprayed with DDT very significantly heavier than on trees sprayed with BHC or lead arsenate, and these latter were more heavily infested than unsprayed control trees, **1946,** II, 42. **A new method of rearing the Fruit Tree Red Spider (*Oligonychus ulmi* Koch) on apple seedlings** by A. M. Massee, **1946,** III, 122. **Notes on the insect fauna of sprayed and unsprayed apple orchards,** by A. M. Massee: of trees examined Fruit Tree Red Spider Mite only found on unsprayed trees, **1947,** III, 132. **The problem of the Fruit Tree Red Spider,** by H. B. S. Montgomery, **1947,** IV, 184. Diphenyl sulphone compared with parathion; use of new acaricides resulted in very satisfactory mite control but dangers associated with destruction of predacious insects emphasized; catalogue of world literature of mite and its predators, **1949,** II, 43. **Observations on the life history of the Fruit Tree Red Spider Mite, *Metatetranychus ulmi* (Koch),** by Catherine A. Blair, **1949,** III, 143. Diphenyl sulphone considerably reduced mite population, **1950,** II, 42. **Damage to apple leaves by the Fruit Tree Red Spider Mite, *Metatetranychus ulmi* (Koch),** by Catherine A. Blair, **1950,** III, 152. **Observations on the dispersal of the Fruit Tree Red Spider Mite, *Metatetranychus ulmi* (Koch),** by Gretl Marlé: the great majority of those migrating are adult females dispersing at periods of peak population, **1950,** III, 155. **Laboratory experiments on the toxicity of potential acaricides,** by A. H. M. Kirby and K. S. McKinlay, **1950,** III, 164. Parathion plus diphenyl sulphone outstanding in reducing mite population, **1951,** II, 43. Summer eggs more resistant to diphenyl sulphone as they get older, **1952,** II, 42. **The Fruit Tree Red Spider Mite, *Metatetranychus ulmi* (Koch): pilot trials in the field of some new ovicides active against winter eggs,** by A. H. M. Kirby, R. P. Tew, and R. G. Gambrill, **1953,** III, 171. **The hatching of summer eggs of the Fruit Tree Red Spider Mite, *Metatetranychus ulmi* (Koch), under artificial conditions,** by A. H. M. Kirby and R. G. Gambrill: summer eggs can be hatched in a normal manner under suitable artificial conditions; light is not essential but a uniform temperature of 24° C. is necessary to get most rapid and complete results, **1953,** III, 175.

predators — *see under* Apple Sawfly; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Fruit Tree Tortrix Moth — *see under* Tortricid moths.

Functional disorders–

Bitter Pit — notes on, **1925** (S), III, 75; **1928-29-30** (S), III, 123. **Preliminary injection experiments on Bitter Pit in apples,** by B. F. G. Levy and W. A. Roach: not affected by boric acid and so different from 'cork' troubles, **1936,** III, 183. Prevalent in 1938, **1938,** III, 167.

Functional disorders–*continued*

Blotchy Pit — notes on, **1937,** III, 181.

'The Death' — notes on, **1928-29-30** (S), III, 124; **1942,** IV, 106. Very prevalent in 1936, **1936,** III, 187. Due to waterlogging, **1939,** III, 59.

Drought Spot — notes on, **1928-29-30** (S), III, 123. Description of and control methods, **1936,** III, 180.

Dwarf Lateral Scorch, Rubi — *see also under* Raspberries, dieback.
notes on, **1935,** IV, 233; **1938,** II, 100; **1940,** II, 22, III, 55. Caused by abnormally mild winter, **1939,** II, 29, III, 59; **1941,** II, 20.

general — **Functional disorders of apples on the tree,** by H. Hill, **1936,** III, 180.

Internal Breakdown — notes on in pears, **1928-29-30** (S), III, 124.

Internal Cork — description of and control methods, **1936,** III, 180.

Jonathan Spot — notes on, **1928-29-30** (S), III, 123.

Lenticel Spotting — notes on, **1934,** III, 142; **1938,** III, 167.

Sun Scald — notes on, **1928-29-30** (S) III, 124. **Sun Scald of fruits,** by M. H. Moore and W. S. Rogers, **1942,** III, 50.

Superficial Cork — *see under* Functional disorders, Drought Spot.

Tree Pit — description of and control methods, **1936,** III, 180.

Water Core — notes on, **1925** (S), III, 75. Description of and control measures, **1936,** III, 180. Rival very susceptible to, **1936,** III, 187.

Fungi — conservation by mineral oil method, **1951,** II, 40.

Fungicides — *see also under* Bordeaux mixture, Lime-sulphur, and other fungicides; Spraying, general. For controlling specific diseases *see also under* such diseases.
notes on field and laboratory investigations, including many references to chemicals not specifically indexed, **1920-21,** 6; **1922,** 37; **1926,** II, 59; **1928,** II, 100; **1929,** II, 70; **1930,** II, 89; **1931,** II, 39; **1932,** II, 42; **1933,** II, 50; **1934,** II, 61; **1935,** II, 67, 68; **1936,** II, 72, 73; **1937,** II, 83, 84, 85; **1938,** II, 83, 85; **1939,** II, 33; **1940,** II, 27; **1941,** II, 25; **1942,** II, 25, 26; **1943,** II, 27; **1944,** II, 30; **1945,** II, 39, 40; **1946,** II, 41, 42; **1947,** II, 38, 44; **1948,** II, 40, 45, 47; **1949,** II, 41, 45, 46; **1950,** II, 40, 45; **1951,** II, 41, 46, 48; **1952,** II, 37, 42, 43, 44; **1953,** II, 40, 46, 48. **Fungicidal spraying of apples,** by N. H. Grubb and N. B. Bagenal, **1923,** III, 120. **Recent work on fungicides and insecticides at East Malling,** by M. H. Moore, W. Steer, and H. Shaw: as regards fungicides deals with Apple Scab, Pear Scab, Brown Rot in Morello cherries, Bacterial Shot Hole and Canker in stone fruits, Branch Blister in apples, Fusarium Bud Rot of apples, and Strawberry Mildew; and chemical investigations of sprays, spray residues, and spray compatibility, **1938,** IV, 253. Certain broad relationships between toxicity and molecular constitution have emerged, **1946,** II, 41. **Apple rootstocks as an outdoor host for mass infection and fungicide testing,** by M. H. Moore, **1946,** III, 118. Damage caused by various inorganic and organic fungicides, **1950,** II, 47. **An intensive field method for testing fungicides for apple trees,** by M. H. Moore: use of unworked rootstocks, **1951,** III, 139. **Can the new organic fungicides help the fruitgrower?,** by M. H. Moore and A. H. M. Kirby, **1951,** IV, 200. **Modifications in the glass-slide spore-germination test for use in fungicide research,** by A. H. M. Kirby and E. L. Frick, **1952,** III, 161.

Fungistatic activity, organophosphorus insecticides — *see under* Insecticides.

Fusarium Bud Rot — *see under* Bud Rot.

Fusarium lateritium — *see under* Bud Rot; Canker and Dieback, mulberries.
,, *lycopersici* — causing wilt of tomatoes, **1949,** II, 40; **1951,** III, 149.
,, *orthoceras* — fungus inducing root rot in strawberries, **1934,** II, 64.
,, *oxysporum* — *see under* Potato Dry Rot.
,, *sambucina* — *see under* Hop Canker.
,, sp. — *see under* Bud Rot; Cane Blight; Crown Rot, raspberries; Raspberries, dieback.

Fusicladium carpophilum — *see under* Plum Scab.
,, *cerasi* — *see under* Cherry Scab.

Gage plums — *see under* Plums.

Gall midges — *see also under* common names of individual gall midges (for full list of names appearing in Index see pages 158-168).
The host plant range and economic importance of a group of gall midges (*Thomasiniana* spp.) associated with fruit, by R. S. Pitcher: gives identification details of Raspberry Cane Midge, Red Bud Borer, Hawthorn Stem Midge, and *Thomasiniana* sp. from host plant range, **1953,** III, 168.

,, mites — *see also under* common names of individual gall mites (for full list of names appearing in Index see pages 158-168); Plum gall mites. observations on, **1931,** II, 42; **1932,** II, 45; **1934,** II, 69; **1935,** II, 63; **1936,** II, 69; **1937,** II, 80; **1938,** II, 81; **1949,** II, 44; **1950,** II, 43; **1951,** II, 44; **1952,** II, 41; **1953,** II, 45. *Phyllocoptes schlechtendali* infesting apple leaves, **1926-27** (S), III, 158. Two new species of mites found on lilac, *Eriophyes löwi* and *Phyllocoptes massalongoi*, **1926-27** (S), III, 159; **1928,** II, 110. *Oxypleurites neglectus* on black currant, **1928,** II, 110. Mite, *Eriophyes piri* var. *arianus*, causing little leaf galls or pocket galls on upper surface of whitebeam leaves, **1936,** III, 222.

Galls — *see also under* Crown Gall; Gall midges; Gall mites.
galls produced using lanolin pastes of indole-butyric acid and NAA on Malling rootstocks M.II, M.VII, and M.XVI; growth of trees of M.II significantly decreased by treatment, of M.VII slightly increased, and of M.XVI unaffected; galls similar to galls produced by *Bacterium tumefaciens*, **1937,** II, 69, 74. Crown Gall of apple rootstocks, including the production of galls by synthetic growth substances, **1937,** III, 187. Production on apple rootstocks by treatment with a growth substance, **1938,** II, 69, 75.

Garden Chafer — apple fruits destroyed by, **1934,** III, 171.

Gardens, fruit in — *see under* Intensive fruit culture.

Garden Swift Moth — *see also under* Ghost Swift Moth.
observations on, **1931,** III, 51; **1949,** III, 126.

Gas storage — *see under* Storage.

Gastropacha quercifolia — *see under* Lappet Moth.

Geometridae spp. — observations on, **1952,** III, 146.

Ghost flower–

apples — notes on, **1951,** II, 35. Outbreak of ghost flower, especially on Beauty of Bath; many branches became oedematous (supersaturated) and subsequently died, **1940,** II, 16.

peaches — occurrence on bush peaches, **1951,** II, 28.

Ghost Swift Moth — *see also under* Garden Swift Moth.
observations on, **1935,** III, 166; **1943,** III, 58; **1946,** III, 126.

Gibberella pulicaris — *see under* Hop Canker.

Girth — *see under* Trunk girth.

Glasshouses, Experimental Farm — *see also under* Greenhouse pests.
general notes on, **1951,** I, 21; **1952,** I, 19; **1953,** I, 20.

Glass-slide spore-germination test — *see under* Slide-germination.

Gloeodes pomigena — *see under* Sooty Blotch.

Gloeosporium album — notes on, **1925** (S), III, 78. Attacks fruits before they are picked as well as in store, **1931,** III, 47.

Gloeosporium Leaf Spot — *see under* Leaf Spot, currants; Leaf Spot, gooseberries.

Gloeosporium ribis — *see under* Leaf Spot, currants; Leaf Spot, gooseberries.

Gloeosporium rot — *see under Gloeosporium album.*

Gloeosporium spp. — *see under* Bitter Rot.

Gloeosporium venetum — *see under* Cane Spot.

Glomerella cingulata — *see under* Ripe Rot, grapes.

Glucose, injection — *see under* Biennial bearing.

Glycerin, use of against frost damage — *see under* Frost damage investigations, apples; Frost damage investigations, general.

Glyoxalidine fungicide 341 — *see also under* Apple Scab; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.
using glyoxalidine fungicide 341 with the usual concentration of lead arsenate in tap water and with the recommended 8 oz. slaked lime per 100 gal. released more soluble arsenic than was present in the lead arsenate suspension alone, **1952,** II, 43.

Gnomonia erythrostoma — *see under* Cherry Leaf Scorch.

,, *leptostyla* — *see under* Walnut Leaf Blotch.

,, sp. — *see under* Strawberry Leaf Blotch.

Gnorimus nobilis — *see under* Beetles, chafer.

Goat Moth — observations on, **1953,** III, 163. Wood-boring caterpillars of, common in 1936, **1936,** III, 225.

Gooseberry (ies)–

- Aphid — observations on, **1949,** III, 129. Vector of Gooseberry Vein-banding, **1951,** III, 133. Tested as possible vector of Reversion of black currants with negative result, **1951,** III, 164.
- aphids — *see also under* Gooseberry Aphid; Gooseberry Vein-banding.
observations on, **1952,** II, 40.
- breeding — *see under* Breeding, soft fruits, gooseberries.
- Bryobia — *see under* Gooseberry Red Spider Mite.
- Clay-coloured Weevil — damage by, **1948,** III, 103.
- Cluster Cup Rust — *see under* Cluster Cup Rust.
- cropping — *see under* Gooseberries, Experimental Farm.
- Currant Clearwing Moth — cuttings attacked, **1948,** III, 104.
- cuttings, hardwood — *see under* Propagation, gooseberries.
- diseases, general — notes on, **1924,** III, 116.
- Experimental Farm — acreage, cropping, and general notes, **1926,** I, 29; **1927,** I, 31; **1928,** I, 28; **1930,** I, 32; **1931,** I, 13; **1932,** I, 14; **1933,** I, 16; **1934,** I, 21; **1935,** I, 19; **1936,** I, 17; **1939,** I, 16; **1940,** I, 12.
- frost damage investigations — *see under* Frost damage investigations, gooseberries.
- Giant — notes on, **1950,** II, 39; **1951,** III, 133.
- HETP damage — *see under* Spray damage.
- Leaf Spot — *see under* Leaf Spot, gooseberries.

Gooseberry (ies)–*continued*
Mildew, American — notes on, **1937,** III, 184; **1940,** III, 58. On black currants, **1925** (S), III, 82.
,, European — occurrence of, **1925** (S), III, 83.
propagation — *see under* Propagation, gooseberries.
Red Spider Mite — observations on, **1928-29-30** (S), III, 191; **1929,** II, 79. DDT causes severe attack of, **1949,** III, 130.
sawflies — *see under* Common Gooseberry Sawfly; Small Gooseberry Sawfly.
spineless varieties — from Canada, **1950,** II, 25.
spray damage — *see under* Spray damage.
thinning — *see under* Fruit thinning, gooseberries.
varieties–
collections, trials, and classification — notes on, **1913-14,** 2; **1914-15,** 6; **1919-20,** 6; **1923,** II, 88.
Vein-banding — notes on, **1952,** II, 37; **1953,** II, 40. Description; *Aphis grossulariae*, *A. schneideri*, *Nasonovia ribis-nigri* (Lettuce Aphid), vectors of, **1951,** III, 133.
virus diseases–
general — *see under* Gooseberry Vein-banding.
vectors — *see under* Gooseberry Vein-banding.
Grading, fruit — *see under* Marketing.
Graft Disease — *see under* Walnuts, Graft Disease.
Grafting–
general — *see also under* Double-working; Red Bud Borer; Silver Leaf; Stem-building.
A method of converting unprofitable fruit trees, by R. J. Garner, **1933,** III, 103. **The use of rubber strips in budding fruit trees,** by R. J. Garner, **1933,** IV, 263. **Studies in nursery technique: shield-budding—the removal of the wood: a progress report,** by R. J. Garner: in the operation of shield-budding, as generally practised in England, the wood is removed, whereas in America it is left attached to the bud shield; retention of wood recommended, **1934,** III, 123. Notes on top grafting and frameworking methods for mature trees, **1935,** II, 31; **1936,** II, 35; **1937,** II, 42; **1938,** II, 42; **1939,** II, 20, IV, 80. **The rapid conversion of unprofitable fruit trees by grafting,** by R. J. Garner, **1935,** IV, 204. Notes on inarching to improve trees on poor rootstocks, **1936,** II, 30. Cane inarching for diagnosing virus diseases in raspberries and other cultivated Rubi, **1937,** II, 94, 101; **1938,** II, 100; **1939,** II, 29; **1942,** II, 22; **1945,** II, 33. **The frameworking of fruit trees,** by R. J. Garner and W. F. Walker, **1937,** IV, 242. **Studies in nursery technique: shield-budding—treatment of inserted buds with petroleum jelly,** by R. J. Garner and D. H. Hammond: prevents damage by Red Bud Borer, **1938,** III, 115. 15-year-old trees doing badly on Northern Spy rootstock were inarched with the vigorous M.XVI five years previously and continue to improve in foliage colour and growth over controls, **1939,** II, 20. In frameworking condition of plum scion wood very important; precautions against entry of Silver Leaf into wounds and to ensure against damage by high winds; cleft grafting superior to bark grafting, **1941,** II, 14. Effects of frameworking compared with topworking on Newton Wonder apple trees, **1941,** II, 15. No correlation between presence of Branch Blister of pears and strength of the graft union, **1941,** II, 26. **Grafting established fruit trees: a wartime solution to a wartime**

Grafting–general–*continued*

problem, by R. J. Garner: simple methods of frameworking, topworking, bridge grafting, and inarching, **1941,** IV, 60. Effect of topworking on potash content of leaves, **1943,** II, 23. **Studies in framework grafting of mature fruit trees. V. Fifteen years comparative performance of frameworked and topworked apple trees,** by R. J. Garner, **1949,** III, 71. **The grafting of very young apple seedlings,** by R. J. Garner: to shorten juvenile phase, **1950,** III, 71.

walnuts — *see under* Propagation, walnuts; Walnuts, general.

Grapes, Ripe Rot — *see under* Ripe Rot, grapes.

Grass and Cereal Mite — observations on, **1943,** III, 65; **1944,** III, 83.

Grasses for cover crops — *see under* Cover cropping.

Grassing down — *see under* Cover cropping.

Grease banding — *see under* Apple Blossom Weevil; Clay-coloured Weevil; Insect control; Tree banding; Winter Moth; Woolly Aphid.

Great Oak Beauty Moth — observations on, **1943,** III, 58.

Green Apple Aphid — *see also under* Apple Mosaic; Ovicides.
observations on, **1950,** III, 145. Varietal resistance to, **1922,** 41; **1923,** II, 93; **1925,** II, 73. **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

,, Blotch — *see under* Frost damage investigations, apples.

,, Capsid Bug — *see under* Common Green Capsid.

Greenhouse pests — **A means of preventing outbreaks of certain pests in experimental greenhouses,** by A. M. Massee: concerns greenhouse red spider and numerous species of aphids, **1941,** III, 51.

,, Red Spider Mite — *see under* Red Spider Mite.

Green Leaf-eating Weevil — *see under* Green Leaf Weevil.

,, Leaf Weevil — observations on, **1932,** III, 109.

,, Petal Disease — notes on, **1952,** II, 36; **1953,** II, 40. **The Green Petal Disease of strawberry,** by A. F. Posnette, **1952,** IV, 184.

Grey Mould — association with various fruits, vegetables, and other plants, **1924,** III, 110; **1925** (S), III, 77; **1926-27** (S), III, 76, 113; **1928-29-30** (S), III, 136; **1930,** IV, 95; **1932,** II, 43, III, 82; **1933,** III, 144; **1937,** III, 184, 185; **1938,** III, 169, 170; **1939,** III, 61; **1940,** III, 57. Association with hops, **1924,** III, 110; **1925,** II, 63; **1925** (S), III, 77; **1939,** III, 62. **The Grey Mould of hops,** by H. Wormald and W. F. Cheal, **1925** (S), III, 94. Wide spacing between strawberry plants reduced infection and sufficiently wide spacing to ensure good air circulation is necessary, **1937,** II, 97. **The Grey Mould of fruit and hops: some possible sources of infection,** by H. Wormald, **1940,** III, 59. **The Grey Mould of fruit and hops: weeds as possible sources of infection,** by H. Wormald: Grey Mould prevalent in first fortnight of June and in first half of autumn, **1941,** III, 44. **Preliminary report on *Monilia fructigena* and *Botrytis cinerea* as wound parasites of cobnuts and filberts,** by M. H. Moore, **1946,** III, 120. Comparison of toxicity of compounds to *Botrytis cinerea* and *Venturia inaequalis*, **1948,** II, 45. **Note on the association of *Botrytis cinerea* with an apple canker, and with various symptoms on sundry other hosts,** by M. H. Moore: *Botrytis cinerea* is noted as probable cause of cankers and rotting in apple and various other hosts, **1948,** III, 101. Aqueous extract of *Hedera helix* stimulating to, **1949,** II, 45. Royal Sovereign strawberries very susceptible to in damp weather, **1952,** IV, 177. Anti-*Botrytis* spray on strawberries, **1953,** II, 27.

Ground beetles — *see also under* Strawberry Ground beetles.
eating stored apples, **1944,** III, 79. Observations on *Laemostenus terricola*, **1945,** III, 90. Beneficial, killed by DDT, **1946,** III, 126. Imported ground beetle, *Somotrichus unifasciatus*, found in store; carnivorous and does no damage to nuts in store, **1953,** III, 162.

Growth — *see also under* Apples, development; Defeathering; Internode growth, factors controlling; Irrigation; Plant injection; Pollination and pollen influence; Pruning; Rootstocks, apple; Rootstocks, influence on growth; Soil moisture studies; Soil variation; Tree size; Tree vigour; Tree weight.
notes on, **1925,** II, 57; **1927,** II, 49; **1928,** II, 88; **1929,** II, 59; **1931,** II, 33; **1932,** II, 37; **1933,** II, 43; **1951,** II, 26. **The relation in the apple between the development of young shoots and the thickening of older stems,** by R. C. Knight, **1925** (S), III, 64. Notes on stem diameter and new shoot growth, **1930,** II, 77. **Course of growth in an apple stock during the maiden year,** by M. C. Vyvyan: distribution of growth between roots, leaves, and stems followed in unworked apple rootstock M.XIII during two seasons, **1928-29-30** (S), III, 85. Increase in weight of a tree during its maiden year more or less proportional to its weight at planting, **1931,** II, 33. Total annual increments in weight found to be distributed in approximately constant proportions between roots, stems, and leaves irrespective of size and age of tree, **1934,** II, 54. Notes on physiology of growth and form in fruit trees, **1949,** II, 33; **1950,** II, 30; **1951,** II, 34; **1952,** II, 29. Development of hop layers, **1949,** III, 76. Leaf areas as basis for growth, **1952,** II, 29. Controlling effect of shoot tip may lie mainly in the very young leaves, and effect of leaf becomes progressively less as it ages, **1953,** II, 32. **Some aspects of growth and development in the fruit plant,** by Prof. R. H. Stoughton, **1953,** III, 51.

,, relations of stock and scion — *see under* Rootstocks, rootstock and scion, growth relations, analysis of.

,, substances — *see also under* Abscission studies; Auxin; Blossom thinning; Chromatography, paper; Coleoptile technique; Concentrated dip; Crotch angles, control of; Crown Gall; Frost damage investigations, general; Fruit drop; Fruit thinning; Galls; Hormones; Indole-3-acetic acid; Indoleacetonitrile; Indole-3-butyric acid; Leaf fall; NAA; Propagation, cuttings, leaf-bud; Propagation, cuttings, stem, hardwood; Propagation, cuttings, stem, softwood; Propagation, hops; Propagation, layering.
The assay of growth substances by a modified straight growth method, by C. R. Hancock and H. W. B. Barlow, **1952,** III, 88.

Grubbing of plantations, Experimental Farm — notes on, **1932,** I, 11; **1933,** I, 14; **1934,** I, 18; **1935,** I, 16; **1936,** I, 15; **1937,** I, 15; **1938,** I, 18; **1945,** I, 13; **1947,** I, 16; **1948,** I, 18; **1949,** I, 17; **1950,** I, 17; **1951,** I, 19; **1952,** I, 17; **1953,** I, 18.

'Guesarol' — *see under* Apple Sawfly; Bean Aphid; Raspberry Beetle.

Gummosis — *see under* Bacterial Canker.

Gymnosporangium confusum — *see under* Cluster Cup Rust, medlars.

Hail — *see also under* Farm, Experimental, reports (as affecting Experimental Farm); Weather conditions.
Brown Rot of apples: note on infection associated with hail bruises and lenticels, by M. H. Moore, **1950,** III, 131.

Hainesia lythri — *see under* Black Root Rot, strawberries.

Hardwood stem cuttings — *see under* Propagation, cuttings, stem, hardwood.

Harvest apple — *see under* Apples, varieties, Harvest.

Hatton, Sir Ronald G., C.B.E., M.A., D.Sc., V.M.H., F.R.S. — an appreciation, **1948**, 14.
Hawthorn Leaf Blotch — notes on, **1926-27** (S), III, 86; **1937**, III, 182.
,, Leaf Miner — observations on, **1950**, III, 144.
,, Stem Midge — *see under* Gall midges.
Hazel Sawfly — observations on; lead arsenate spray very effective, **1944**, III, 80.
Heat treatment–
cuttings, hardwood — *see under* Propagation, cuttings, stem, hardwood.
Strawberry Mite — *see under* Strawberry Mite.
virus diseases — *see under* Virus diseases, heat treatment.
Hedera helix — *see under* Ivy.
Helicobasidium purpureum — *see under* Violet Root Rot.
Hemipteron, predacious — on apple and plum, observations on *Loricula elegantula*, **1944**, III, 81.
Hemitarsonemus latus — *see under* Broad Mite.
Hens — *see under* Apple Blossom Weevil.
Hepialus humuli — *see under* Ghost Swift Moth.
,, *lupulinus* — *see under* Garden Swift Moth.
Herbage analysis — use in measuring changes in sward composition, **1948**, II, 25.
Herbicides — *see under* Weedkillers.
Hessian anti-frost screens — *see under* Frost damage investigations, general.
Heterodera humuli — *see under* Hop Eelworm.
,, *schachtii* — *see under* Hop Eelworm.
,, spp. — *see under* Sodium hypochlorite.
Heteromerus beetles — *see under* Beetles, general.
Heteropterous plant bugs — observations on *Kleidocerys resedae*, **1949**, III, 128.
HETP — *see also under* Hop-Damson Aphid; Leaf-curling Plum Aphid; Spray damage (on gooseberries).
fungistatic activity of, **1950**, III, 172.
Himacerus lativentris — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.
Himalaya Berry — *see under* Blackberries; Raspberry Leaf and Bud Mite.
Histological investigations — *see also under* Rootstocks, rootstock and scion, mutual influence of, including incompatibility.
notes on, **1932**, II, 23; **1933**, II, 27; **1934**, II, 34; **1938**, II, 42; **1942**, II, 14; **1945**, II, 18; **1946**, II, 17; **1950**, II, 21; **1951**, II, 26.
The relation in the apple between the development of young shoots and the thickening of older stems, by R. C. Knight: in the spring new wood formation in the stem of the apple begins in close proximity to a developing shoot and spreads vertically downwards, **1925** (S), III, 64. **A preliminary report on the internal structure of the wood of No. IX rootstock in relation to scion-rooting of apples**, by A. Beryl Beakbane and Margaret E. Renwick: scion roots had large vessels, M.IX roots had small vessels; scions with large vessels do not necessarily induce an increase of vessel size in the rootstock, **1935**, III, 100. Close correlation found to exist between the vigour of certain apple rootstocks and (1) the bark to wood ratio, (2) percentage area of wood rays, wood fibres, and vessels, (3) the size of vessels as seen in transverse section, **1938**, II, 39. **Preliminary selection of apple rootstocks immune from Woolly Aphis based on certain anatomical differences in root**

Histological investigations–*continued*

structure, by A. Beryl Beakbane, Eleanor C. Thompson, and H. M. Tydeman, **1940,** III, 32. Correlation found between percentage of living tissue in roots of plums and cherries and vigour of scion variety, **1944,** II, 17. **Accelerating rootstock research,** by A. Beryl Beakbane and Eleanor C. Thompson, **1944,** IV, 106. In new clonal apple rootstocks, percentage root bark and also the relative amounts of rays and fibres in the wood of the root found to be correlated with the vegetative vigour and fruitfulness of a scion variety budded on them, **1947,** II, 22. Correlation established between root structure of rootstocks and the vigour and age of bearing of scions worked on them; studies on relationship between structure of stems of fruit plants and production of adventitious roots, **1948,** II, 23. Rings of M.IX, M.XVI, *Malus purpurea,* and seedling 3426 inserted in M.XVI stem below union for study of the ring structure, **1948,** II, 24. Initiation of phloem necrosis in the incompatible combination of Hale's Early peach on Myrobolan B; Priestley's bark stripping technique used to study progress across graft union of stimulus causing initiation of cambial activity in spring, **1949,** II, 22. Anatomy of hop layers, **1949,** III, 76. Amount of starch and necrosis of phloem in stems and roots of some compatible and incompatible combinations of peach compared; similar symptoms recorded for 'quick decline' disease of citrus, **1950,** II, 21. Structure of graft union, condition of inner bark above and below union, and distribution of starch in different parts of the tree are related to incompatibility, **1951,** II, 25. Phloem in roots of young quince trees grafted with incompatible pear scions showed varying degrees of abnormality; possible causes of failure of graft union between President plum and Myrobolan B rootstock following topworking with Victoria have been investigated, **1951,** II, 26. **A study of the bark-wood relationship in apple stems,** by Barbara Mosse: scion stems on dwarfing rootstocks had a greater bark percentage than stems of the same scion variety on vigorous rootstocks, **1951,** III, 70. **Anatomical studies of stems and roots of hardy fruit trees. V. The histology of the roots of the apple Malling Crab C when budded with certain scion and rootstock varieties,** by Eleanor C. Thompson, **1951,** III, 76. Effects of compatible and incompatible pear scions on phloem structure of quince rootstocks, **1952,** II, 21. Relation of bark percentage of apple stems to rootstock; roots of vigorous rootstock have a higher proportion of living tissue when the rootstocks are worked with a scion of a very dwarfing type than with one of a vigorous type, **1952,** II, 22. Investigations into nature of frost damage, **1952,** II, 24. Close relationship found between cell shape and cell wall thickness in the phelloderm and resistance to Woolly Aphid; evidence of relationship between structure of the tissues between the cortex and secondary phloem and ease of rooting from stems, **1953,** II, 24.

Homopterous insects — observations on *Ledra aurita,* **1935,** III, 166.

Honey Bee — *see under* Apples, blossoming.

Honeydew of aphids — analysis of, **1952,** II, 32, 41.

Hop(s)–

anatomy — *see under* Hop layers.

aphids — *see under* Hop-Damson Aphid.

Armillaria Root Rot — *see under* Armillaria Root Rot.

Black Root Rot — *see under* Black Root Rot, hops.

Hop(s)–*continued*

Canker — notes on, **1925** (S), III, 84; **1939,** II, 35; **1949,** IV, 179. Occurrence at Faversham; both stages found, including *Gibberella pulicaris*, **1939,** III, 62. Caused by *Fusarium sambucina*, **1944,** II, 31.

Capsid — observations on, **1943,** III, 63; **1949,** III, 128. Non-transmitter of Nettlehead, **1944,** II, 32.

Chlorotic Disease — *see under* Chlorotic Disease.

Clay-coloured Weevil — damage by, **1946,** III, 124; **1950,** III, 141.

Cobb's Mosaic — *see under* Cobb's Mosaic.

Cockchafer damage — *see under* Cockchafer.

cropping — *see under* Hops, Experimental Farm.

crown rot — disease attributed to *Armillaria mellea* on eight farms in Kent, **1939,** III, 62.

cultural, picking, and training trials — notes on, **1926,** II, 76; **1929,** II, 97; **1930,** II, 123; **1931,** II, 45; **1932,** II, 48; **1933,** II, 56; **1934,** II, 73; **1935,** II, 40; **1936,** II, 45; **1937,** II, 54; **1938,** II, 52; **1939,** II, 34; **1940,** II, 29; **1941,** II, 27; **1942,** II, 28; **1944,** II, 31; **1945,** II, 41; **1946,** II, 44; **1947,** II, 46; **1948,** II, 48; **1949,** II, 48. **Cultural trials with hops. I. The effect of distance of planting and number of bines per string: a progress report,** by F. H. Beard: yield per acre greatly increased by closer planting; yield per hill is increased by wider spacing of the hills; the number of bines per string has had less effect on yield than the distance of planting, but two bines per string have given heavier yields than one bine, **1933,** III, 132. **Cultural trials with hops. II. The effect of distance of planting and number of bines: a final report on the trial with the seedling L21,** by F. H. Beard: yield per acre greatly increased by close planting, and yield per hill by wide spacing; number of bines trained up each string had considerably less effect on cropping than distance of planting, **1936,** III, 117. Review of work on, **1937,** III, 163. **The effect of various cultural treatments on the cropping of hops,** by F. H. Beard: discusses distance of planting, number of bines per string, pulling and cutting, and problems arising out of use of picking machines, **1939,** III, 76. **Cultural trials with hops. III. The effect of 'stopping' and number of bines per string on a vigorous late variety (OV7),** by F. H. Beard: 'stopping' the bines at the lacing string proved effective in preventing the formation of excessive heads over the top wire; over a 5-year period 'stopping' caused a reduction in yield, **1942,** III, 70. **A comparison of the performance of sets and cuts of hops when planted in their permanent positions,** by F. H. Beard, **1942,** III, 73. **Cultural trials with hops. IV. The effect of distance of planting and hard and light pulling on Brewer's Favourite,** by F. H. Beard: both spacing and pulling treatments influenced the yield, but spacing had, on the whole, the greater effect, **1944,** III, 92. Trial of 'cutting' the hills three times with and without subsequent removal of most favoured bine, **1947,** II, 46. **The classification of hop varieties according to their ease of picking,** by F. H. Beard: includes requirements for machine picking, **1950,** III, 187.

-Damson Aphid — observations on, **1931,** III, 52; **1943,** III, 63; **1950,** III, 146; **1951,** III, 159; **1952,** III, 120; **1953,** III, 166. *Scymnus punctillum* predacious on, **1939,** III, 70. Migration of from whitethorn and damson in the spring and summer months, feeding on hop, then returning to winter hosts in autumn, **1941,** III, 49. Negative results with immature forms of Hop-Damson Aphid as vector of virus diseases, **1943,** II, 29. Insecticidal trials with E605, HETP, and nicotine; both E605 and HETP better than nicotine, though E605

was more toxic than HETP, **1948,** II, 46. Parathion at 0·01%, HETP and TEPP effective against the aphid, **1949,** III, 129.

diseases — *see also under* common names of diseases (for full list of those appearing in Index see pages 169-175).
notes on, **1924,** III, 117, 174; **1925** (S), III, 83; **1926-27** (S), III, 84; **1937,** III, 165; **1939,** II, 34, III, 62; **1940,** II, 29; **1941,** II, 27; **1942,** II, 28; **1943,** II, 28; **1944,** II, 31; **1945,** II, 41; **1946,** II, 44; **1947,** II, 46; **1948,** II, 48; **1949,** II, 48. **Notes on hop diseases in 1941,** by W. G. Keyworth: comments on Verticillium Wilt, Nettlehead, Fluffy Tip, Chlorotic Disease, and Mosaic Disease, **1941,** III, 42. **Three important hop diseases,** by W. G. Keyworth: description of Verticillium Wilt, Nettlehead, and Mosaic Disease, **1944,** IV, 130. **Diseases of hops,** by W. G. Keyworth and J. Paine: paper read at Hereford, **1949,** IV, 174.

Downy Mildew — notes on, **1924,** III, 117, 174; **1925** (S), III, 83; **1926-27** (S), III, 85, 117; **1930,** II, 123; **1931,** II, 46; **1932,** II, 49; **1939,** III, 62. Effect on number of sets produced, **1950,** III, 190. Varietal differences in certain Golding hops, **1951,** III, 193.

Early Prolific — as indicator of Nettlehead and Mosaic Disease, **1952,** II, 35.

Eelworm — in 1944 and 1945 references, scientific name is incorrectly shown as *Heterodera rostochiensis;* the correct present name is *H. humuli.* observations on, **1943,** II, 29; **1944,** II, 32. Experiments as to possible vector of Mosaic and Nettlehead; gave negative results in 1944, **1945,** II, 42. No evidence of virus transmission by Hop Eelworm, **1949,** II, 49.

Experimental Farm — acreage, cropping, and general notes, **1913-14,** 3; **1914-15,** 7; **1915-16,** 6; **1919-20,** 6; **1920-21,** 7; **1922,** 18; **1926,** I, 30; **1927,** I, 32; **1928,** I, 29; **1929,** I, 27; **1930,** I, 33; **1931,** I, 18; **1932,** I, 19; **1933,** I, 20; **1934,** I, 26; **1935,** I, 21; **1936,** I, 20; **1937,** I, 29; **1938,** I, 30; **1939,** I, 16; **1940,** I, 13; **1941,** I, 12; **1942,** I, 12; **1943,** I, 12; **1944,** I, 15; **1945,** I, 14; **1946,** I, 14; **1947,** I, 18; **1948,** I, 20; **1949,** I, 19.

Flea Beetle — observations on, **1928-29-30** (S), III, 195; **1941,** III, 49; **1946,** III, 124. Tested as carrier of Nettlehead; not successful, **1948,** II, 49.

Fluffy Tip — *see under* Fluffy Tip, hops.

Froghopper — *see under* Hop Leafhopper.

general — general notes, **1919-20,** 6; **1920-21,** 7; **1927,** II, 81.

Grey Mould — *see under* Grey Mould.

grubbing of — *see also under* Grubbing of plantations, Experimental Farm.
Brewer's Gold and Bullion last cropping on Experimental Farm, **1951,** I, 19.

insects on — **List of insects occurring on the hop,** by J. Paine, **1951,** III, 179.

layers — **Observations on the development and anatomy of hop layers,** by Dorothy J. Wilson, **1949,** III, 76.

Leaf Curl — notes on, **1948,** II, 49; **1949,** IV, 177. Causes leaves to curl downwards and become dark green with necrotic spots, **1947,** II, 47.

leaf disease — due to *Ascochyta* sp. found on continent, but not so far in England, **1926-27** (S), III, 85.

Leafhopper — observations on, **1925** (S), III, 159; **1940,** III, 63; **1941,** II, 28, III, 49; **1942,** II, 29; **1943,** II, 29.

Leaf Miner — observations on, **1941,** III, 48.

,, Spot — *see under* Cercospora Leaf Spot.

Hop(s)–*continued*

lightning damage — notes on, **1945,** II, 42.

manurial deficiencies — *see under* Mineral deficiencies.

manuring — *see under* Manuring, hops.

Mildew — notes on, **1924,** III, 117; **1946,** II, 44; **1951,** III, 193. **Observations on the incidence of Mould (*Sphaerotheca humuli*) on the new seedling hops at East Malling in 1945,** by F. H. Beard, **1945,** III, 107.

mineral deficiencies — *see under* Mineral deficiencies.

Mosaic Disease — notes on, **1924,** III, 174; **1937,** III, 165; **1939,** II, 35; **1940,** II, 30; **1941,** II, 27, III, 43; **1942,** II, 29; **1944,** II, 31, IV, 134; **1945,** II, 42; **1947,** II, 47; **1948,** II, 49; **1949,** IV, 176; **1950,** II, 40; **1951,** II, 41; **1952,** II, 35. Undesirability of planting Fuggle and Golding hops in close proximity; both mosaic-carrier and mosaic-susceptible male hops exist, **1942,** II, 29. Natural vectors, **1945,** II, 42; **1949,** II, 49. **Mosaic Disease of the hop: a study of tolerant and sensitive varieties,** by W. G. Keyworth: study of incidence of mosaic-carrier plants in commercial plantations of Fuggle and observations on the incidence of Mosaic Disease in Golding hops planted near to Fuggle, **1946,** III, 142. Petham Golding and Early Prolific as indicator varieties for, **1952,** II, 35. **Insect vector studies with Mosaic and other virus diseases of the hop,** by J. Paine, **1952,** III, 120.

Mould — *see under* Hop Mildew.

Nettlehead — *see under* Nettlehead.

'Oak Leaf' — chlorotic patterns on leaves, **1947,** II, 47.

Petham Golding — indicator variety for Mosaic of hops and a line-pattern mosaic, **1952,** II, 35.

Phytophthora Root Rot — *see under* Black Root Rot, hops.

picking — *see under* Hops, cultural, picking, and training trials.

Powdery Mildew — *see under* Hop Mildew.

prices — *see under* Hops, valuations.

propagation — *see under* Propagation, hops.

Pug Moth — damage by, **1948,** III, 103.

Red Spider (Mite) — *see under* Red Spider Mite.

research work — general review of, **1939,** II, 34; **1940,** II, 29; **1941,** II, 27; **1942,** II, 27; **1943,** II, 27; **1944,** II, 30; **1945,** II, 41; **1946,** II, 44; **1947,** II, 46; **1948,** II, 48; **1949,** II, 48. **A review of hop investigations at East Malling,** by F. H. Beard: hop investigations to date briefly summarized, **1937,** III, 161.

root rot — *see under* Black Root Rot, hops.

root studies — notes on, **1938,** II, 44, 53; **1939,** II, 34; **1940,** II, 29; **1943,** II, 28.

Root Weevil — observations on, **1937,** III, 203; **1946,** III, 124; **1950,** III, 141.

seed germination — **The treatment of hop seed to improve germination,** by J. Paine: removal of operculum with a needle before planting, **1950,** III, 139.

'shattering' — studies on control of, **1951,** II, 35.

Shy Bug — *see under* Hop Capsid.

slugs, damage by — *see under* Slugs.

Small Hop Disease — *see under* Small Hop Disease.

Snout Moth — similar damage to Currant Pug Moth, **1948,** III, 104.

Split Leaf Blotch — *see under* Split Leaf Blotch.

Hops–*continued*

Strig Maggot — *see under* Hop Strig Midge.

Strig Midge — observations on, **1938,** III, 183; **1939,** II, 35; **1941,** II, 28; **1942,** II, 29; **1943,** II, 29. Only one generation in a year, **1940,** II, 28.

thrips — *see under* Rose Thrips.

training — *see under* Hops, cultural, picking, and training trials.

valuations — notes on, **1939,** I, 16; **1942,** I, 12; **1943,** I, 13; **1944,** I, 15; **1946,** I, 15; **1947,** I, 19; **1948,** I, 21. **Prices obtained for certain new varieties of hops, 1931-37,** by F. H. Beard, **1937,** III, 166.

varieties–

collections, trials, and classification — *see under* Verticillium Wilt as regards Wilt-susceptible and Wilt-tolerant varieties.
notes on, **1922,** 43; **1923,** II, 96; **1926,** II, 73, 74; **1928,** II, 127; **1929,** II, 97; **1930,** II, 123; **1931,** II, 45; **1932,** II, 48; **1933,** II, 56; **1934,** II, 73; **1935,** II, 40; **1936,** II, 45; **1937,** II, 53; **1938,** II, 52, 53; **1939,** II, 34; **1940,** II, 29; **1941,** II, 27; **1942,** II, 27; **1943,** II, 27, 28; **1944,** II, 30; **1945,** II, 41; **1946,** II, 44; **1947,** II, 46; **1948,** II, 48; **1949,** II, 48. **Hop experiments: the testing of new varieties of hops,** by R. G. Hatton and J. Amos, **1924,** III, 169. Review of work on, **1937,** III, 161. **Commercial varieties of hops: a preliminary comparison of their chief characteristics at East Malling,** by F. H. Beard, **1942,** III, 75. **The merits of the new varieties of hops,** by E. S. Salmon, F. H. Beard, and R. G. Hatton, **1942,** IV, 108. **The classification of hop varieties according to their ease of picking,** by F. H. Beard, **1950,** III, 187. **Seven clonal selections of Golding hops,** by F. H. Beard, **1951,** III, 189. Petham Golding and Early Prolific as indicator varieties for Hop Mosaic, a line-pattern mosaic, and Nettlehead, **1952,** II, 35.

Verticillium Wilt — *see under* Verticillium Wilt, hops.

virus diseases–

general — *see also under* Chlorotic Disease; Cobb's Mosaic; Fluffy Tip; Hop Leaf Curl; Hop Mosaic; Hops, 'Oak Leaf'; Nettlehead; Split Leaf Blotch; Virus diseases, heat treatment, hops.
notes on, **1950,** II, 40; **1951,** II, 41; **1952,** II, 35; **1953,** II, 39.

vectors — *see also under* Hop Capsid; Hop-Damson Aphid; Hop Eelworm; Hop Flea Beetle; Hop Mosaic Disease; Nettlehead; Rose Thrips; Split Leaf Blotch.
notes on, **1937,** III, 165; **1941,** II, 28; **1942,** II, 29; **1943,** II, 29; **1948,** II, 49; **1949,** II, 49; **1953,** II, 39. **Insect vector studies with Mosaic and other virus diseases of the hop,** by J. Paine: transmission of Mosaic by winged Hop-Damson Aphid and Split Leaf Blotch by Potato Aphid, *Macrosiphon euphorbiae,* **1952,** III, 120.

wireworms — *see under* Wireworms.

Hoplocampa brevis — *see under* Pear Sawfly.

,, *flava* — *see under* Plum Sawfly.

,, *testudinea* — *see under* Apple Sawfly.

Hormones — *see also under* Growth substances.
notes on, **1938,** II, 69; **1940,** II, 21; **1945,** II, 28; **1946,** II, 30; **1947,** II, 32; **1948,** II, 36; **1949,** II, 34; **1950,** II, 32, 35; **1951,** II, 35; **1952,** II, 29; **1953,** II, 32. **A note on the hormone treatment of cuttings,** by E. S. J. Hatcher and R. J. Garner, **1947,** IV, 182. **A method for estimating hormone activity in the plant,** by M. Rosalie Rawes and E. S. J. Hatcher: a description of the *Avena*

Hormones–*continued*

coleoptile method for estimating auxins, **1948,** IV, 157. Separation and identification of in apple shoots, **1950,** II, 35.

Horse-radish Leaf Spot — *see under* Leaf Spot, horse-radish.

Horticultural meteorology — *see under* Meteorology, horticultural.

Howgate Wonder apple — *see under* Apples, varieties, Howgate Wonder.

Humulus lupulus — *see under* Hops.

Hyalopterus arundinis — *see under* Mealy Plum Aphid.

,, *pruni* — *see under* Mealy Plum Aphid.

Hybrid berries–

Boysenberry — *see under* Boysenberry.

general — (including references to hybrid berries other than those specifically indexed).
notes on, **1940,** IV, 89; **1941,** II, 16; **1944,** II, 20; **1947,** II, 25. **Cultivated blackberries, dewberries, and hybrid berries: a progress report,** by A. Beryl Beakbane, **1932,** III, 68. **Trials of loganberries, blackberries, and hybrid berries,** by A. Beryl Beakbane, **1938,** IV, 213.

loganberries — *see under* Loganberries.

Phenomenal Berry — *see under* Phenomenal Berry.

propagation — *see under* Propagation, hybrid berries.

virus diseases — *see under* Rubi, virus diseases.

Youngberry — *see under* Youngberry.

Hydriomena truncata — *see under* Common Marbled Carpet Moth.

Hydrogen-ion concentration — *Pseudomonas mors-prunorum* does not survive outside range pH 2·8 to 9·6, **1939,** II, 32. **The effect of hydrogen-ion concentration on the ovicidal activity of some nitrophenol emulsions,** by R. G. Davies and J. K. Eaton: against the eggs of *Aphis pomi* strongly alkaline DNC less toxic than acid or slightly alkaline one, but effect unlikely to be of practical importance, **1948,** III, 111.

Hydrogen peroxide — use for sterilizing Vinegar Eelworm, **1952,** III, 138.

8-Hydroxyquinoline potassium sulphate — *see under* Leaf and Bud eelworms, general; Silver Leaf.

Hypena rostralis — *see under* Hop Snout Moth.

Hyperomyzus lactucae — *see under* Currant-Lettuce Aphid.

Inarching — *see under* Grafting.

Incompatibility — *see under* Double-working; Histological investigations; Raspberry Mosaic; Rootstocks, rootstock and scion, mutual influence of, including incompatibility; Spray compatibility.

Incurvaria rubiella — *see under* Raspberry Moth.

Indole-3-acetic acid — *see under* Coleoptile technique, curvature; Coleoptile technique, straight growth.

Indoleacetonitrile — much less effective on apple petioles than IAA or NAA, **1952,** II, 30.

Indole-3-butyric acid — *see also under* Crotch angles, control of; Galls; Propagation, cuttings, stem; Propagation, hops; Propagation, layering.
effect on raspberry root growth, **1947,** II, 52.

Inhibitors — *see under* Growth substances.

Injection, plants — *see under* Plant injection.

Inorganic analysis — *see under* Analysis, chemical, inorganic.

Insect attacks — **A simple method of forecasting insect attacks in orchards previous to the spraying season,** by A. M. Massee, **1931,** IV, 78.

,, control — for control of specific insect *see under* common name of insect. **The relative value of tar-distillate washes, spring washes and grease-banding in any scheme of insect control,** by A. M. Massee: gives number of insects controlled and not controlled by tar-distillate washes, **1930,** IV, 111.

,, fauna — **Notes on the insect fauna of sprayed and unsprayed apple orchards,** by A. M. Massee: of trees examined, Apple Capsid and Fruit Tree Red Spider Mite only present on sprayed trees, **1947,** III, 132.

Insecticides — *see also under* Spraying, general. *See also under* specific name of insecticide. For controlling specific pests *see also under* such pests. For acaricides *see under* Acaricides. For ovicides *see under* Ovicides; Winter washes.
notes on field and laboratory investigations, including many references to chemicals not specifically indexed, **1934,** II, 61, 71; **1935,** II, 66, 67; **1936,** II, 71, 72, 73; **1937,** II, 83, 84, 85; **1938,** II, 83; **1939,** II, 32; **1943,** II, 27; **1944,** II, 30; **1946,** II, 41; **1948,** II, 45; **1949,** II, 45; **1950,** II, 44; **1951,** II, 46; **1952,** II, 42. **Recent work on fungicides and insecticides at East Malling,** by M. H. Moore, W. Steer, and H. Shaw: deals with insecticides for Raspberry Beetle, Apple Sawfly, Apple Blossom Weevil, Codling Moth, the testing of insecticides, chemical investigations of sprays, spray residues, and spray compatibility, **1938,** IV, 253. **The fungistatic activity of certain organophosphorus insecticides,** by A. H. M. Kirby and E. L. Frick: tested parathion, HETP, and TEPP, schradan, and other compounds, **1950,** III, 172. **Experiments on increasing the penetration of ovicides and insecticides,** by J. S. McKinlay, A. H. M. Kirby, and M. Allen: benzyl alcohol is a successful penetrant, **1950,** III, 177.

Insecticides and Fungicides Section — *see under* Plant Protective Chemistry Section.

Insect populations — **A method for the estimation of insect populations on fruit trees,** by Elsie Collyer: pyrethrum in oil is atomized to form a cloud which envelopes tree and causes a rapid knock-down of insects, **1950,** III, 148.

Insects, beneficial — *see under* Beneficial insects and mites.

,, and mites — **Notes on some interesting insects and mites observed,** by A. M. Massee, **1925** (S), III, 157; **1926-27** (S), III, 157; **1928-29-30** (S), III, 189; **1931,** III, 51; **1932,** III, 109; **1933,** III, 176; **1934,** III, 165; **1935,** III, 164; **1936,** III, 222; **1937,** III, 203; **1938,** III, 180; **1939,** III, 70; **1940,** III, 61; **1941,** III, 47; **1942,** III, 64; **1943,** III, 58; **1944,** III, 77; **1945,** III, 90; **1946,** III, 124; **1947,** III, 135; **1948,** III, 102; **1949,** III, 126; **1950,** III, 141; **1951,** III, 155; **1952,** III, 146; **1953,** III, 162.

Intensive fruit culture–

cordons — *see also under* Intensive fruit culture, general.
notes on, **1935,** II, 28; **1936,** II, 31; **1937,** II, 39; **1938,** II, 38, 45; **1939,** II, 20; **1944,** II, 17, IV, 115; **1945,** II, 18; **1947,** III, 93, IV, 157; **1948,** II, 27; **1949,** IV, 156; **1950,** II, 24; **1951,** II, 29. **Cordon culture of apples,** by H. B. S. Montgomery, **1943,** IV, 77.

dwarf pyramids — *see also under* Intensive fruit culture, general.
notes on, **1938,** II, 39, 46; **1939,** II, 20; **1944,** IV, 115; **1945,** II, 18; **1946,** II, 19; **1947,** IV, 157; **1948,** II, 27; **1949,** II, 26, IV, 156; **1950,** II, 24; **1951,** II, 29. **The intensive culture of hardy fruit trees.**

Intensive fruit culture–dwarf pyramids–*continued*

II. A trial of dwarf pyramid trees on Malling rootstocks, by A. Beryl Beakbane and Leslie R. E. Martin, **1945,** III, 45. **Dwarf pyramid culture,** by Leslie R. E. Martin, **1945,** IV, 123.

espaliers — *see also under* Intensive fruit culture, general.
notes on, **1947,** IV, 162.

general — **The amateur's fruit garden,** by Hilary M. Hughes, **1943,** IV, 94. **The Bradbourne walled gardens,** by T. N. Hoblyn, **1944,** IV, 115. **Intensive methods of apple and pear growing,** by A. Beryl Beakbane, **1947,** IV, 157. **Spraying in the fruit garden,** by A. M. Massee, **1948,** IV, 148. Notes on Bradbourne gardens, **1949,** II, 26. **The model gardens at Bradbourne,** by J. H. Walker, **1949,** IV, 156.

Intermediate stem pieces — *see under* Double-working; Stem-building.

Internal Breakdown — *see under* Functional disorders, Internal Breakdown.

,, Cork — *see under* Functional disorders, Internal Cork.

Internode growth, factors controlling — influence of individual leaves on growth of young internodes of Crab C stoolbed shoots, **1951,** II, 34. Very young leaves in terminal bud exert profound influence on extension of internodes of both apple and tomato stems, **1952,** II, 29.

Interveinal scorch — *see under* Leaf scorch, apples; Magnesium deficiency.

Iron — *see also under* Analysis, chemical, inorganic, iron; Chlorosis; Mineral deficiencies; Plant injection; Water culture.
The cure of deficiencies of iron or manganese, by S. G. Thompson, **1944,** IV, 119. Failure of spraying to cure iron deficiency, **1950,** II, 36.

Irrigation–

apples — *see also under* Root development studies (**1933,** III, 86).
A preliminary irrigation trial, by J. Amos, R. G. Hatton, and A. C. Painter: on apples—results inconclusive, **1932,** III, 64. Notes on irrigation of apple trees; average size of fruit slightly larger on irrigated trees, **1934,** II, 41. Irrigation of series of apple trees in pots, **1938,** II, 47. **An apple irrigation trial, using soil moisture meters,** by W. S. Rogers: irrigation increased size of fruit by 11%, but application of water in trial not economic, **1938,** III, 118. No evidence that June drop due to lack of moisture, but irrigation probably increased fruit size and caused poorer keeping qualities, **1940,** II, 16. Effect on tree growth, **1951,** II, 26. Two new irrigation trials started on apples on Larkfield plantation, **1953,** II, 25.

general — notes on, **1940,** IV, 82. Useful crop increases in soft fruits and vegetables can be obtained in England by watering, **1942,** II, 17. Favourable effect of older swards on water penetration, **1945,** II, 19. **Irrigation requirements of fruit orchards,** by W. S. Rogers and J. E. Goode, **1952,** IV, 171.

pears — *see under* Pears, blossom, non-setting of.

raspberries — notes on, **1941,** II, 17; **1942,** II, 17.

strawberries — notes on, **1937,** II, 48; **1938,** IV, 226; **1951,** II, 30. Irrigation trial on strawberries, **1938,** II, 47. Artificial irrigation, equal to 1 in. rain, applied by spray method to certain plots soon after picking commenced gave 70% increase in amount of first grade fruit and 27% increase in total fruit weight, **1938,** II, 94. Use of overhead irrigation produced increased crops of Royal Sovereign, **1939,** II, 21. In strawberry trial, ¾ in. of water, applied following 18 days'

Irrigation–strawberries–*continued*

drought, increased the first grade fruit by 31% and total marketable fruit by 19%; symptom expression of virus diseases of strawberry found related to soil moisture and air temperature, **1941,** II, 17. Strawberry plot prepared for irrigation trial, **1944,** II, 21. Significant improvement from irrigation, **1945,** II, 21. Two applications, each equivalent to 1 in. of rain, gave favourable results, **1947,** II, 27. Irrigation trial on strawberry runners, **1948,** II, 30. Irrigation representing 1 in. of rain applied to Huxley at beginning of cropping period; strawberries yielded twice crop of non-irrigated plots; Huxley more sensitive to drought than other varieties, **1949,** II, 29. Experiments in irrigation, **1953,** IV, 220.

Isochlorogenic acid — presence in pear leaves, **1952,** II, 31. Also in green coffee beans, **1952,** II, 32.

Isopropyl phenyl carbamate — *see under* Weedkillers, strawberries.

Itama wauaria — *see under* V Moth.

Ivy — aqueous extract toxic towards *Venturia inaequalis* but stimulatory to *Botrytis cinerea,* **1949,** II, 45.

J49 — a fungicide, **1952,** II, 44.

Jonathan apple — *see under* Apples, varieties, Jonathan.

„ Spot — *see under* Functional disorders, Jonathan Spot.

Juglans sieboldiana — notes on, **1937,** II, 53.

Juice, apple — presence of blastocollin and chlorogenic acid, **1952,** II, 24.

June drop — *see under* Fruit drop.

Juvenile phase — notes on shortening of, **1931,** II, 26; **1932,** II, 29; **1933,** II, 35; **1934,** II, 41; **1936,** II, 42; **1937,** II, 51; **1938,** II, 50. A dwarfing and precocious rootstock can hasten the blossoming of seedling apples, **1935,** II, 37. Severe pruning delays fruiting but no result from attempts to induce earlier fruiting by restricting the root systems in pots or growing under glass, **1936,** II, 42. **Experiments on hastening the fruiting of seedling apples,** by H. M. Tydeman: seedlings worked on dwarfing rootstock M.IX came into blossom more quickly than those worked onto the vigorous M.XII or grown on their own roots, **1936,** III, 92. **The grafting of very young apple seedlings,** by R. J. Garner: an experiment designed to shorten the juvenile phase, **1950,** III, 71.

Katabatic winds — notes on, **1936,** II, 46; **1937,** II, 55; **1938,** II, 54. **A note on frost damage investigations,** by C. E. Cornford: cause of formation of a katabatic wind described, **1936,** III, 126. **Researches into the cause and prevention of frost damage,** by C. E. Cornford, **1938,** IV, 209. Under so-called calm, clear, night conditions, when speed of wind in valley was less than 2 m.p.h. its temperature was lower in relation to hill air temperature than would be expected; conversely, when speed of valley air exceeded 2 m.p.h. its temperature was higher than expected, **1940,** II, 18.

Keeping quality, fruit — *see under* Apples, keeping quality.

Kleidocerys resedae — *see under* Heteropterous plant bugs.

Knight, R. C., D.Sc.(Lond.), D.I.C. — an appreciation, **1934,** 13.

Knotgrass Moth — not of economic importance, **1937,** III, 206. Larvae controlled by DDT dust at 25 lb. per acre, **1949,** III, 126.

Labour — **An investigation into means of reducing the labour needed for recording crops,** by S. C. Pearce, **1942,** III, 36.

Lacewing Bug — observations on, **1942,** III, 66.

,, Fly — *see under* Dustywings.

,, Minute — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Lacewings — *see under* Dustywings.

Ladybird beetles — *see under* Beneficial insects and mites, predators, general.

Laemostenus terricola — *see under* Ground beetles.

Laine fog-producing apparatus — for protection against frost, **1951,** II, 29.

Lampronia capitella — *see under* Currant Shoot Borer.

,, *rubiella* — *see under* Raspberry Moth.

Lappet Moth — observations on, **1936,** III, 224; **1937,** III, 206.

Large Flax Flea Beetle — observed feeding on apple leaves, **1944,** III, 78; **1952,** III, 146.

,, Fruit Bark Beetle — observations on, **1934,** III, 170. Larvae of, eaten by Ant Beetle, **1947,** III, 135.

,, Willow Aphid — observations on, **1935,** III, 168; **1937,** III, 208.

Late flowering varieties of apple — *see under* Breeding, top fruits, apples.

Lavender diseases — notes on, **1924,** III, 118.

Layer beds– — *see also under* Propagation, layering.

Prunus spp., wilting in — notes on, **1935,** II, 57; **1937,** II, 77; **1938,** II, 78, III, 169; **1940,** III, 57; **1944,** II, 26. Due to *Cylindrocladium* sp., probably *C. scoparium*, which causes a Crown Canker in roses in Britain and the United States, and a root rot of strawberry in Canada, **1936,** II, 66. Found for first time on apricot, **1936,** III, 189. Trial of control by spraying gave promising results, **1941,** II, 22. Disease caused by *Cylindrocladium* sp., **1942,** II, 22. Control measures suggested are (1) raising layer rows from cuttings when practicable, (2) avoiding propagation from plots with infected shoots, or disinfecting the stocks before transplanting them, **1943,** II, 24.

Layering — *see under* Propagation, layering.

Lead — in apple rootstocks, **1928-29-30** (S), III, 101.

Lead arsenate — *see also under* Apple Fruit Moth; Apple Leaf Skeletonizer; Apple Sawfly; Apple Scab; Black-bodied Sawfly; Carbon dioxide; Clay-coloured Weevil; Codling Moth; Common Gooseberry Sawfly; Earwigs; Fruit Tree Red Spider Mite; Hazel Sawfly; Pear Slug Sawfly; Raspberry Beetle; Spray compatibility; Spray damage; Spraying, general; Spray residues.
use with NAA spray, **1944,** II, 24; **1947,** III, 101; **1948,** II, 35. Mixed with glyoxalidine fungicide 341, **1952,** II, 43.

mercurated — *see under* Mercurated lead arsenate.

Leaf areas — basis for estimating tree growth, **1952,** II, 29.

,, Blight–

celery — controlled by Bordeaux or Burgundy mixture, **1925** (S), III, 84.

medlars — caused by *Fabraea maculata*, **1939,** III, 61.

pears — due to *Fabraea maculata*; notes on, **1926-27** (S), III, 115. Infected from adjacent quince, **1928-29-30** (S), III, 128.

quinces — notes on **1924,** III, 116. Caused by *Fabraea maculata*, **1926-27** (S), III, 82, 115; **1936,** III, 189. Quince C more susceptible than Quince A, **1937,** III, 183. Controlled by Bordeaux mixture, **1938,** III, 168.

Leaf Blister–

pears — notes on, **1928-29-30** (S), III, 130.

Leaf Blotch–

dahlias — notes on, **1926-27** (S), III, 86.

hawthorn — *see under* Hawthorn Leaf Blotch

medlars — caused by *Sclerotinia mespili*, **1935,** III, 143.

quinces — notes on, **1925,** II, 61; **1932,** III, 83. **A leaf blotch of quince trees,** by H. Wormald, **1925** (S), III, 87.

Shasta daisy — notes on, **1925,** II, 63; **1926-27** (S), III, 86; **1928-29-30** (S), III, 131; **1933,** III, 146. **A disease of the Shasta daisy,** by H. Wormald: due to *Septoria leucanthemi*; occurrence at Bearsted and Hayling Island, **1925** (S), III, 96.

strawberries — *see under* Strawberry Leaf Blotch.

walnuts — *see under* Walnut Leaf Blotch.

Leaf-bud cuttings — *see under* Propagation, cuttings, leaf-bud.

Leaf and Bud eelworms

on black currants — *see also under* Leaf and Bud eelworms, general.
observations on, **1940,** III, 65; **1942,** III, 67.

general — **A preliminary note on methods for obtaining bacteria-free eelworms,** by J. E. Crosse and R. S. Pitcher: ethoxyethyl mercury chloride and 8-hydroxyquinoline potassium sulphate as successful sterilizers, **1952,** III, 138.

on strawberries — *see also under* Leaf and Bud eelworms, general.
observations on, **1947,** II, 41; **1948,** II, 43; **1949,** II, 44; **1950,** II, 40, 43; **1951,** II, 40. 44; **1952,** II, 34, 40; **1953,** II, 44. **A preliminary report on the Strawberry Eelworm (*Aphelenchoides fragariae* Ritzema Bos),** by G. H. L. Dicker: main eelworm population lives in crown of plant, the growing tip of which may be killed, causing the premature production of secondary corms; these in turn become invaded with eelworms and produce the condition known as Red Plant, **1947,** III, 144. Field trials on persistence in soil and population fluctuations, **1952,** II, 40.

Leaf and Bud Mite — notes on, **1926-27** (S), III, 158; **1951,** III, 159.

Leaf Burn, strawberries — notes on, **1952,** III, 130.

,, chemical composition of — seasonal changes in, **1951,** II, 38.

,, cleaning — *see under* Analysis, chemical, inorganic, general.

,, count method, thinning — notes on, **1949,** II, 24; **1950,** II, 23; **1951,** II, 28.

,, Curl–

cherries — *see under* Cherry Leaf Curl.

hops — *see under* Hops, Leaf Curl.

raspberries — **A leaf curl disease of raspberry in Scotland,** by R. V. Harris, A. D. Bryce, and C. E. Foister: graft transmitted from Norfolk Giant to healthy stools of old Baumforth's Seedling B, producing the symptoms of so-called 'Baumforth's Disease', **1942,** III, 48. Extremely sensitive to climatic conditions, **1945,** II, 33. Striking correlation between severity of the symptom picture and thermal conditions; at 65-70° F. partial or complete recovery of infected canes was noted, typical symptoms reappearing when the temperature fell below this level, **1946,** II, 47. No success with transmission using *Amphorophora rubi* and *Aphis idaei*, **1947,** II, 50. *Aphis rubiphila* vector of leaf curl virus, **1950,** III, 127. Notes on and commercial varieties affected in Scotland, **1950,** IV, 203.

Leaf-curling Plum Aphid — notes on, **1938,** II, 85. In insecticidal trials E605 more toxic than HETP, and both superior to nicotine at similar strength, **1948,** II, 46.

Leaf-cutter Bee — observations on, **1942,** III, 66.

Leaf-cutting Bee — *see under* Leaf-cutter Bee.

,, drop — *see under* Leaf fall.

,, fall — *see also under* Spray damage.
use of NAA spray for prevention of, **1941,** II, 20; **1949,** II, 34; **1950,** II, 31.

,, Fleck, pears — notes on, **1934,** III, 144.

Leafhoppers–

apples — observations on, **1940,** III, 64; **1951,** III, 158. Attacks less on fertilizer-injected trees, **1934,** III, 135.

cherries — *see under* Cherry Leafhopper.

general — observations on, **1951,** III, 158; **1952,** III, 148.

hops — *see under* Hop Leafhopper.

plums — observations on, **1929,** II, 80; **1940,** III, 64; **1947,** III, 139; **1951,** III, 158.

strawberries — *see under* Rose Leafhopper; Strawberries, burning over.

Leaf imprint (or 'mangle') technique — *see under* Fruit Tree Red Spider Mite, general.

,, injection — *see under* Plant injection.

,, miners — *see also under* Apple Leaf Miner; Crab Leaf Miner; Hawthorn Leaf Miner; Plum Cambium Miner.
Lithocolletis coryli on leaves of cultivated nuts, **1950,** III, 144.

,, painting — *see under* Mineral deficiencies (**1944,** III, 67).

,, relations — *see under* Rootstocks, influence on leaf relations.

,, Roll, plums — notes on, **1952,** IV, 182.

,, scorch– — *see also under* Spray damage.

apples — *see also under* Manuring, apples; Mineral deficiencies (**1944,** II, 25).
Field observations on the incidence of leaf scorch upon the apple, by R. G. Hatton and N. H. Grubb: variety of rootstock strongly influences development of leaf scorch; leader tipping has consistently tended to reduce scorch; leaf scorch tends to reduce size of fruit, **1924,** III, 41. Differential response of the same varieties upon different rootstocks to interveinal leaf scorch generally attributed to magnesium deficiency; interveinal scorch symptomatic of magnesium deficiency was only severe on trees with low N/K ratio, **1940,** II, 15. In long-term fertilizer trials there were only slight signs of marginal leaf scorch, but interveinal scorch was worse than in 1944; where nitrogen applied interveinal scorch was reduced, **1945,** II, 19.

cherries — *see under* Cherry Leaf Scorch.

raspberries — unexplained leaf scorch, **1950,** II, 25.

strawberries — notes on, **1928-29-30** (S), III, 131.

Leaf Spot–

antirrhinums — *see under* Antirrhinum Leaf Spot.

apples — *see under* Black Rot, apples.

apricots — *see under* Bacterial Canker, apricots.

beetroot — notes on, **1926-27** (S), III, 86.

cherries — *see under* Bacterial Blossom Blight, cherries, Morello; Bacterial Canker, cherries.

currants–

Gloeosporium — *see under* Leaf Spot, currants, *Pseudopeziza ribis.*

Leaf Spot–currants–*continued*

Pseudopeziza ribis — notes on, **1925** (S), III, 82; **1928-29-30** (S), III, 128; **1936,** III, 190; **1937,** III, 184; **1939,** III, 61; **1942,** IV, 107.

Septoria — notes on, **1938,** III, 169. **The Septoria Leaf Spot disease of black currants,** by H. Wormald: control measures as those for Gloeosporium Leaf Spot, **1938,** III, 176.

Elaeagnus — notes on, **1925** (S), III, 84.

French beans — notes on, **1925** (S), III, 86.

gooseberries — notes on, **1936,** III, 190; **1940,** III, 58. Caused by *Gloeosporium ribis*; controlled by spraying with Bordeaux after the fruit is picked, **1941,** III, 41.

hops — *see under* Cercospora Leaf Spot.

horse-radish — notes on, **1926-27** (S), III, 86.

lilac — notes on, **1926-27** (S), III, 86.

pears — *see under* Leaf Blight, pears; Leaf Fleck, pears.

plums — *see under* Bacterial Canker, plums.

quinces — *see under* Leaf Blight, quinces.

raspberries — *see under* Cane Spot, raspberries.

Rubus spp. — *see under* Cane Spot, *Rubus* spp.

strawberries — notes on, **1936,** III, 190.

yucca — notes on, **1928-29-30** (S), III, 131.

Leaf weevils — *see also under* Brown Leaf Weevil; Green Leaf Weevil; Silver-green Leaf Weevil.
notes on, *Polydrosus cervinus and P. sericeus*, **1945,** III, 92.

Lecanium coryli — *see under* Brown Scale.

Lecanora varia — lichen used as food by Psychid Moth caterpillar, **1939,** III, 71.

Ledra aurita — observations on, **1935,** III, 166.

Leitzkauer Pressauerkirsche — *see under* Rootstocks, cherries.

Lemna sp. — *see under* Abscission studies.

Lenticels — *see under* Brown Rot, apples.

Lenticel Spotting — *see under* Functional disorders, Lenticel Spotting.

Leopard Moth — observations on, **1935,** III, 165; **1949,** III, 127; **1950,** III, 142.
Wood-boring caterpillars of, common in 1936, **1936,** III, 225.

Leptosphaeria coniothyrium — *see under* Cane Blight, raspberries.

Lesser Yellow Underwing Moth — observations on, **1950,** III, 142.

Lettuce Aphid — *see also under* Black Currant Reversion.
vector of Gooseberry Vein-banding, **1951,** III, 133.

,, diseases — notes on, **1924,** III, 118.

Ley experiments — *see under* Cover cropping.

Librodor hortensis — *see under* Beetles, general.

Light-brown Apple Moth — *see under* Tortricid moths.

Light Emerald Moth — observations on, **1939,** III, 71; **1953,** III, 163.

Lightning damage–

hops — *see under* Hops, lightning damage.

raspberries — *see under* Raspberries, lightning damage.

Light traps, mercury-vapour — for recording moth activity, **1951,** II, 44; **1952,** II, 39, 40.

Lilac Bacterial Blight — notes on, **1932,** II, 43, III, 82; **1933,** II, 51, III, 146.

Lilac, bacteriosis — *see under* Lilac Bacterial Blight.

,, gall mites — *see under* Gall mites.

,, Leaf Spot — *see under* Leaf Spot, lilac.

Lilies, wilting — *Botrytis elliptica* on, **1932,** III, 82.

Lime — hot lime wash, **1927,** IV, 72.

Lime-sulphur — *see also under* Apple Mildew; Apple Scab; Arsenic, soluble; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite; Black Currant Gall Mite; Black Currant Reversion; Black-kneed Capsid; Brown Rot, cherries, Morello; Cane Spot; Codling Moth; Frost damage investigations, apples; Fruit Tree Red Spider Mite; Pear Scab; Red Spider Mite; Spray compatibility; Spray damage; Spraying, general; Spraying, low volume; Spray residues; Strawberry Mildew; Strawberry Mite.
notes on, **1927,** IV, 70. Saponin used to increase spreading power of lime-sulphur wash, **1919,** 5. **On a new method for precision testing in the laboratory of the toxicity of lime-sulphur and of Bordeaux mixture as protective fungicides: a progress report,** by H. B. S. Montgomery and M. H. Moore: describes method of standardizing application of sprays and fluids, and methods of raising supplies of scab spores (conidia) and standardizing the application of the spores, **1934,** III, 217. Release of soluble arsenic from metallic arsenates by lime-sulphur, **1938,** II, 83; **1939,** II, 32; **1948,** II, 46; **1951,** II, 47. Use with NAA spray, **1941,** II, 20; **1948,** II, 35; **1951,** III, 108. When mixed with parathion, **1949,** II, 45.

Lindera benzoin — extract shown to have fungicidal activity, **1942,** II, 26.

Line Pattern, plums — notes on, **1952,** III, 131, IV, 182.

Linopodes motatorius — *see under* Mushroom mites.

Lithocolletis corylifoliella — *see under* Hawthorn Leaf Miner.

,, *coryli* — *see under* Nut Leaf Blister Moth.

Little Longhorn Beetle — observations on, **1928-29-30** (S), III, 195; **1945,** III, 90.

Lobster Moth — observations on, **1936,** III, 225.

Locusts (*Locusta migratoria migratorioides*) — use in insecticide trials, **1950,** II, 44; **1952,** II, 42.

Loganberry (ies)–

Beetle — *see under* Raspberry Beetle.

'Blind Bine' — not associated with concentrated lesions of Cane Spot as in previous seasons, **1936,** III, 188.

Cane Spot — *see under* Cane Spot, loganberries; Loganberries, 'Blind Bine'.

copper sprays — residues, **1936,** III, 240.

cover cropping — notes on trials, **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 27.

cropping — *see under* Loganberries, Experimental Farm.

cultural measures — notes on, **1940,** II, 17; **1941,** II, 17; **1943,** II, 18; **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 27; **1948,** II, 30; **1949,** II, 28; **1950,** II, 26.

dieback — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.

diseases — *see also under* common names of diseases (for full list of those appearing in Index see pages 169-175).
Notes on diseases of the raspberry, loganberry and blackberry in 1928-1930, by R. V. Harris, **1928-29-30** (S), III, 133.

Dwarf — *see under* Rubus Stunt.

Loganberry (ies)–*continued*

Experimental Farm — acreage, cropping, and general notes, **1937,** I, 20; **1938,** I, 24; **1939,** I, 16; **1940,** I, 12; **1941,** I, 11; **1942,** I, 11; **1944,** I, 13; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 18; **1949,** I, 16; **1950,** I, 16; **1951,** I, 18; **1952,** I, 16; **1953,** I, 18.

growing of, general — *see also under* Loganberries, varieties.
A note on the training of loganberries and blackberries, by A. Beryl Beakbane, **1933,** IV, 247. Notes on training, **1934,** II, 44; **1937,** II, 101; **1938,** II, 99; **1942,** II, 27; **1944,** II, 21; **1948,** II, 30; **1949,** II, 28; **1950,** II, 26. Growing on rusty wire and clean wire gave no difference, **1949,** II, 28.

manuring — *see under* Manuring, loganberries.

propagation — *see under* Propagation, loganberries.

training — *see under* Loganberries, growing of, general.

varieties–

collections, trials, and classification — notes on, **1932,** II, 32; **1933,** II, 38; **1934,** II, 42; **1936,** II, 85; **1937,** II, 100; **1938,** II, 98; **1941,** II, 16; **1944,** II, 20; **1947,** II, 25; **1948,** II, 29; **1951,** II, 29; **1952,** II, 25; **1953,** II, 27. **Cultivated blackberries, dewberries, and hybrid berries: a progress report,** by A. Beryl Beakbane, **1932,** III, 68. **Trials of loganberries, blackberries, and hybrid berries,** by A. Beryl Beakbane: includes causes for falling off in yield of loganberries in recent years, (1) the large number of 'rogue' loganberries grown, (2) the spread of Cane Spot disease, **1938,** IV, 213. **Some practical points in the growing of loganberries and blackberries,** by A. Beryl Beakbane and N. B. Bagenal, **1940,** IV, 89.

virus diseases– — *see also under* Rubus Stunt.

diagnosis by cane inarching — *see under* Rubi, virus diseases.

vectors — *see under* Rubi, virus diseases, vectors; Rubus Stunt.

Lonchocarpus — as control for Apple Blossom Weevil, **1944,** II, 28.

Longhorned beetles — *see also under* Little Longhorn Beetle.
observations on *Prionus coriarius* and *Phymatodes testaceous*, **1936,** III, 224; **1950,** III, 141.

Longicorn, Little — *see under* Little Longhorn Beetle.

Longitarsus parvulus — *see under* Flax Flea Beetle.

Longiunguis pyrarius — *see under* Brown Leaf-curling Pear Aphid.

Lophopteryx camelina — *see under* Coxcomb Prominent Moth.

Lord Lambourne apple — *see under* Rubbery Wood.

Loricula elegantula — *see under* Hemipteron.

Low volume spraying — *see under* Spraying, low volume.

Lucanus cervus — *see under* Stag Beetle.

Lucerne, use as cover crop — *see under* Cover cropping.

,, Crown Gall — *see under* Crown Gall, lucerne.

Luffia ferchaultella — *see under* Psychid Moth.

Lygus pabulinus — *see under* Common Green Capsid.

Lyonetia clerkella — *see under* Apple Leaf Miner.

Lytta vesicatoria — *see under* Blister Beetle.

M.IX crosses — *see under* Rootstocks, apple.

Macrosiphon euphorbiae — *see under* Potato Aphid.

Madame Lefebvre strawberry — *see under* Strawberries, varieties.

Magdalis barbicornis — *see under* Pear Weevil.

,, *cerasi* — *see under* Black Weevil.

,, *ruficornis* — *see under* Plum Weevil.

Magnesium — *see also under* Analysis, chemical, inorganic, magnesium; Mineral deficiencies.
Interveinal scorch, symptomatic of magnesium deficiency, only severe on trees with low N/K ratio, **1940,** II, 15. Use of magnesium sulphate on apples in pot cultural trial, **1952,** I, 19. Symptoms of magnesium deficiency prevented by spraying four times with 2% magnesium sulphate, **1952,** II, 32. Attempt to determine to what extent effect of spray on Fruit Tree Red Spider Mite due to direct effect of the magnesium sulphate, and how much to effect of magnesium sulphate on the tree and only indirectly on the Fruit Tree Red Spider Mite, **1953,** II, 35.

Malathon — insecticide compared with parathion; 0·025% malathon causes same mortality as 0·01% parathion; a similar ratio found with a dipping technique for *Aphis pomi* on rootstocks, **1952,** II, 42.

Maleic hydrazide — *see under* Blossoming, delaying; Weedkillers.

Malling-Merton apple rootstocks — *see under* Rootstocks, apple.

,, Promise raspberry — *see under* Raspberries, varieties.

Malus purpurea, rings of — *see under* Histological investigations.

,, spp. and *Prunus* spp. — virus transmissions between, **1952,** III, 131.

,, *zumi* — used for pollination of King of the Pippins in order to secure material with marked differences in frost resistance, **1949,** II, 25.

Mamestra trifolii — *see under* Nutmeg Moth.

Manchester University, Botany Department — plant extract assayed for ability to inhibit abscission, **1951,** II, 35. Substance in extract identified as indoleacetonitrile and is much less effective on apple petioles than IAA or NAA, **1952,** II, 30.

Manganese — *see also under* Analysis, chemical, inorganic, manganese; Biennial bearing; Mineral deficiencies; Mineral nutrition.
Comparison of diagnosis of manganese deficiency in mangolds with effect of curative spraying, by W. A. Roach and T. N. Hoblyn: on the unsprayed plots the yield was highest where the symptoms were most severe, and spraying produced the largest increase in crop on the mangolds exhibiting the least severe symptoms, **1944,** III, 67. **The cure of deficiencies of iron or manganese,** by S. G. Thompson, **1944,** IV, 119. **Physiological effects of manganese,** by B. D. Bolas and G. B. Portsmouth: no increase in apparent photosynthesis was found from injection of a dilute solution of manganese sulphate into potato plants, but a significant increase in dry weight per unit area was obtained; manganese levels in experimental leaflets were effectively raised by injection, **1947,** III, 126. **Manganese deficiency in potatoes,** by B. D. Bolas: liberation of manganese by local accumulations of carbon dioxide would go far to account for the patchy distribution of symptoms, and the higher manganese contents of the plants with more compacted root systems, **1948,** III, 99. Studies in manganese deficiency, **1950,** II, 36; **1951,** II, 39. Carbon dioxide concentration in soil atmosphere has no effect on manganese uptake by potato plant, **1950,** II, 36. Manganese deficient potato leaves contained less dry weight per unit net weight and tended to curl more on drying than normal leaves, accounting for 'lodging' in manganese deficient wheat, **1951,** II, 37.

'Mangle' (or leaf imprint) technique — *see under* Fruit Tree Red Spider Mite, general.

Mangolds -

Flea Beetle — on leaves of strawberry, **1937,** III, 204.

manganese deficiency — *see under* Manganese.

Violet Root Rot — *see under* Violet Root Rot.

Manuring– — *see also under* individual manures; Cover cropping; Mineral deficiencies; Mineral nutrition; Mulching; Plant injection.

apples– — *see also under* Apple Canker; Apple Scab; Branch Blister.

general — notes on, **1919-20,** 5; **1922,** 31; **1923,** II, 85; **1924,** II, 39; **1925,** II, 39; **1926,** II, 37; **1927,** II, 40; **1928,** II, 37; **1929,** II, 35; **1930,** II, 42; **1931,** II, 25; **1932,** II, 27; **1933,** II, 32; **1934,** II, 39; **1935,** II, 34; **1936,** II, 40; **1937,** II, 47; **1938,** II, 47; **1939,** II, 20; **1940,** II, 15; **1941,** II, 15; **1942,** II, 15; **1943,** II, 16; **1944,** II, 19; **1945,** II, 19; **1946,** II, 18; **1947,** II, 23; **1948,** II, 25; **1949,** II, 23; **1950,** II, 22; **1951,** II, 27; **1952,** II, 23; **1953,** II, 25. Noticeable effects due to potash manuring, **1926,** II, 37. The accumulated effect of application of potassium sulphate to apple trees has resulted not only in much healthier foliage but more vigorous growth and heavier crop of larger fruit, **1927,** II, 40. **The effects of potash fertilizers on apple trees,** by N. H. Grubb: emphasizes that potash manuring is only likely to be effective where leaf scorch is more or less in evidence (but not if leaf scorch is due to waterlogged soil), **1928,** IV, 70. Effect of rootstock on response to manuring, **1928-29-30** (S), III, 18. **Apple manurial trials,** by T. N. Hoblyn and W. A. Bane: discusses the renovation of unmanured trees, treatment of trees under grass, effect of grassing down, effect of nitrogenous manures, and general applicability of results, **1933,** III, 59. **Manurial experiments with apples and pears at East Malling, 1919-38,** by W. A. Bane, **1938,** IV, 205.

NPK factorial trial — *see also under* Manuring, apples, general (notes on).
Manurial experiments with apples and pears at East Malling, 1919-38, by W. A. Bane, **1938,** IV, 205.

black currants — *see also under* Mulching, straw.
notes on, **1913-14,** 2; **1914-15,** 6; **1915-16,** 6; **1916-17,** 8; **1917-18,** 5; **1918-19,** 13; **1919-20,** 6; **1922,** 34; **1925,** II, 39; **1926,** II, 37; **1928,** II, 39; **1929,** II, 37; **1930,** II, 45; **1943,** II, 18; **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 27; **1948,** II, 30; **1949,** II, 29; **1950,** II, 26; **1951,** II, 30. Almost exclusive importance of an organic manure (dung), **1919-20,** 6. Manurial trial involving use of sewage sludge and derived composts compared with inorganic fertilizers, **1949,** II, 29.

hops — notes on, **1922,** 46; **1923,** II, 97; **1932,** II, 48; **1940,** II, 29; **1942,** II, 28, 29. **Scheme of manurial trials with hops,** by J. Amos, **1924,** III, 176. Details of manurial experiments, **1926,** II, 75. **Manurial trials with hops,** by J. Amos and T. N. Hoblyn: experiment ravaged by Mosaic so results problematical, **1926-27** (S), III, 165. **Symptoms of manurial deficiencies in hops,** by F. H. Beard, **1932,** IV, 156. Review of work on, **1937,** III, 161. Certain foliage symptoms are associated with deficiency of certain elements, **1939,** II, 34. High nitrogen gave an increase in yield of nearly 3½ cwt. per acre over low nitrogen with variety OI47, **1941,** II, 27. In this year no differential effect with manurial treatments, **1943,** II, 28. With OI47, nitrogen at rate of 73 lb. per acre gave lower yields than at 219 lb. per acre; reduction in amount of nitrogen not a satisfactory method of reducing vigour of a strong growing variety;

Manuring–hops–*continued*

cropping reduced without any apparent diminution of bine growth, **1944,** II, 31. In manurial trials added nitrogen gave greater Wilt incidence, **1947,** II, 47; **1949,** II, 49; **1950,** II, 39.

loganberries — notes on, **1944,** II, 21; **1945,** II, 21; **1947,** II, 27; **1948,** II, 30; **1949,** II, 28; **1950,** II, 26.

onions — owing to wet summer of 1920, though onions on manured plot showed much more vigour and continued growth than those on green manured plot, the latter dried off early in the season and actually gave a greater weight of marketable crop; the manured plot gave a higher percentage of 'thick necked' onions, **1923,** III, 85.

pears — notes on, **1935,** II, 35; **1936,** II, 40; **1937,** II, 48; **1938,** II, 47. **Manurial experiments with apples and pears at East Malling, 1919-38,** by W. A. Bane, **1938,** IV, 205.

plums — *see also under* Bacterial Canker, plums.
notes on, **1937,** II, 48.

raspberries — notes on, **1923,** III, 129; **1928,** II, 39; **1931,** II, 29; **1932,** II, 33; **1933,** II, 39; **1935,** II, 72; **1936,** II, 78; **1937,** II, 92; **1938,** II, 91; **1951,** II, 30; **1952,** II, 26; **1953,** II, 27. Plots receiving 2½ cwt. of potassium sulphate per acre each year for three years bore significantly more fruit than those which received the same amount in alternate years (twice to date), **1937,** II, 93. Comparing permanent straw mulch with cultivation and two levels of nitrogen, **1951,** II, 30.

strawberries — notes on, **1934,** II, 44; **1935,** II, 76; **1936,** II, 81; **1937,** II, 97; **1938,** II, 94, IV, 226; **1953,** II, 27.

Manwaring, Percy, J.P. — an appreciation, **1939,** 11.

Marbled Carpet Moth, Common — *see under* Common Marbled Carpet Moth.

March Moth — observations on, **1928-29-30** (S), III, 198.

Marketing, fruit — notes on, **1930,** I, 31; **1931,** I, 12; **1932,** I, 13; **1933,** I, 15; **1934,** I, 19; **1935,** I, 17; **1936,** I, 15; **1937,** I, 18, II, 52; **1938,** I, 20, II, 51; **1939,** I, 13, IV, 82; **1940,** I, 11; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 11; **1946,** I, 11; **1947,** I, 15; **1948,** I, 17; **1949,** I, 15; **1950,** I, 17; **1951,** I, 18; **1952,** I, 17; **1953,** I, 18. **The effects of various fruit growing practices on fruit quality and market value,** by R. G. Hatton, **1928,** IV, 47. **Fruit marketing today,** by A. C. Painter, **1949,** IV, 180.

Marssonia juglandis — *see under* Walnut Leaf Blotch.

Marssonina juglandis — *see under* Walnut Leaf Blotch.

Martinmas apple — *see under* Apples, varieties, Martinmas.

Mass spectrometer — *see under* Analysis, mass spectrometer.

MCPA, sodium salt of — *see under* Weedkillers.

Meadow Nematode — possibly plays a part in Black Root Rot complex of strawberries, **1950,** II, 43; **1951,** II, 44. Incidence of Meadow Nematode on roots of top and soft fruits being investigated, **1952,** II, 40.

Mealy Plum Aphid — observations on, **1942,** III, 67. Honeydew of, cause of Sooty Mould of plums, **1940,** III, 57.

Mediterranean Fruit Fly — observations on, **1939,** III, 73.

Medlars–

Brown Rot — *see under* Brown Rot, medlars.

Cluster Cup Rust — *see under* Cluster Cup Rust, medlars.

Medlars–*continued*

Leaf Blight — *see under* Leaf Blight, medlars.

,, Blotch — *see under* Leaf Blotch, medlars.

Mildew — caused by *Podosphaera leucotricha*, **1938,** III, 169.

Megachile sp. — *see under* Leaf-cutter Bee.

Meligethes aeneus — *see under* Beneficial insects and mites, pollinators.

Meloidogyne spp. — *see under* Sodium hypochlorite.

Melolontha melolontha — *see under* Cockchafer.

Members, East Malling Research Station Association, alphabetical list — *see under* East Malling Research Station, general.

Mercurated lead arsenate — *see also under* Phenyl mercury chloride.
'Mercurated lead arsenate'—what is it? what does it do?, by H. Shaw and M. H. Moore: phenyl mercury chloride is precipitated on ordinary lead arsenate powder or paste used for caterpillar control, the two making a very convenient combined fungicide and insecticide, **1944,** IV, 128. Use with NAA spray, **1951,** III, 108.

Mercury residues — *see under* Spray residues.

Mercury-vapour light trap — *see under* Light traps, mercury-vapour.

Metallus pumilus — *see under* Raspberry Leaf-mining Sawfly.

Metatetranychus ulmi — *see under* Fruit Tree Red Spider Mite.

Meteorological conditions — *see under* Weather conditions.

Meteorology, horticultural — *see also under* Katabatic winds; Weather conditions; Wind.
notes on, **1936,** II, 45; **1937,** II, 55; **1938,** II, 53; **1941,** II, 17; **1942,** II, 17; **1943,** II, 18; **1944,** II, 21; **1945,** II, 21; **1946,** II, 22; **1947,** II, 27; **1948,** II, 31; **1949,** II, 29; **1950,** II, 26; **1951,** II, 30; **1952,** II, 26; **1953,** II, 28.

Methyl bromide — as fumigant for Strawberry Mite, **1941,** II, 23; **1943,** II, 26; **1948,** II, 43.

,, cellulose — a disperser, **1946,** II, 42; **1947,** II, 44.

Metrocampa margaritata — *see under* Light Emerald Moth.

Michaelmas Red apple — *see under* Apples, varieties, Michaelmas Red.

Micrambe vini — *see under* Beneficial insects and mites, pollinators.

Microsphaera grossulariae — *see under* Gooseberry Mildew, European.

Microthyriella rubi — fructifications found on raspberry canes, **1928-29-30** (S), III, 136.

Midges — *see under* common names of midges (for full list of names appearing in Index see pages 158-168).

Mild Crinkle, strawberries — *see under* Crinkle, strawberries.

Mildew — *see under* name of host (for full list of names appearing in Index see pages 169-175).

Mineral composition, apple trees — *see also under* Mineral deficiencies; Mineral nutrition.
leaves of vigorous rootstock M.XII contained less calcium, more magnesium, and probably more potassium than those on dwarfing rootstock M.IX; potassium content of leaves from flowering spurs markedly greater than that from leaves of non-flowering shoots in trees on M.XII, but not markedly different on M.IX, **1944,** II, 25. Survey made of variability in mineral composition of different parts of apple tree, **1952,** II, 31.

,, deficiencies — *see also under* individual elements; Analysis (for further information regarding diagnosis of mineral deficiencies); Chlorosis; Manuring;

Mineral deficiencies–*continued*

Plant injection (for further references to diagnosis and cure of mineral deficiencies).

Symptoms of manurial deficiencies in hops, by F. H. Beard, **1932,** IV, 156. **Leaf injection,** by W. A. Roach: cure of chlorosis in pear; results suggest that similar deficiency diseases can be diagnosed and cured in three weeks, **1935,** III, 134. **The injection of single interveinal areas of leaves for diagnosis of mineral deficiency,** by W. A. Roach, **1936,** III, 142. **Leaf stalk injection for the diagnosis of mineral deficiency,** by W. A. Roach: when liquid is absorbed by a leafy shoot through the stump of a leaf stalk left after the rest of the leaf has been removed, it permeates parts of most of the neighbouring leaves in a regular manner, **1936,** III, 150. **Plant injection for the diagnosis of mineral deficiencies,** by B. F. G. Levy, **1938,** IV, 235. **Diagnosis of mineral deficiencies and excesses by systematic leaf injection and analysis,** by W. A. Roach: gives leaf injection and leaf analysis methods for extensive nutritional survey of plants and for the solution of specific mineral deficiency problems, **1939,** III, 51. **The study of mineral deficiencies and excesses by spectrochemical methods,** by S. G. Thompson, **1939,** IV, 86. **Studies in the non-setting of pears. VI. The injection of pear trees for the diagnosis of carbohydrate and mineral deficiencies,** by F. C. H. Gayner: defective mineral nutrition may be one cause of shy cropping, **1940,** III, 50. **Feeding the fruit tree—new light on an old subject,** by N. B. Bagenal: diagnosis of mineral deficiencies by spectrographic and injection methods, **1940,** IV, 87. Deficiencies of some elements were most marked in leaves from non-fruiting spurs, **1941,** II, 20. **The present position regarding the diagnosis of mineral deficiencies in fruit trees by plant analysis and plant injection,** by W. A. Roach: describes two complementary methods for diagnosing mineral deficiency in plants, **1943,** IV, 99. **A review of our knowledge of mineral deficiencies in fruit trees,** by S. G. Thompson: includes notes on symptoms and on diagnostic and curative measures, **1943,** IV, 103. Some evidence that magnesium content of scorched apple leaves was lower than that of healthy apple leaves, not only when trees were deficient in magnesium, but also deficient in potassium; severely scorched leaves tended to be low in manganese also, **1944,** II, 25. **Mineral deficiencies in agricultural and horticultural crops,** by W. A. Roach: includes methods of diagnosis and cure, **1944,** III, 43. **Progress in the diagnosis and cure of mineral deficiencies in cherries,** by S. G. Thompson and Winifred O. Roberts: notes on mineral deficiencies in cherries in Sittingbourne area; unlikely that diagnosis by symptoms can suggest more than a partial cure, **1944,** III, 60. **Combined mineral deficiencies in fruit trees,** by Winifred O. Roberts: deficiency of potassium, iron, and/or manganese and six trees low in boron; preliminary experimental injections of the necessary nutrients in solid form have given encouraging indications, **1944,** III, 64. **Leaf painting as a method of diagnosis of mineral deficiency,** by Winifred O. Roberts, **1944,** III, 67. **Comparative susceptibilities of certain horticultural and agricultural plants to trace element deficiencies,** by R. J. Garner and W. A. Roach: of thirteen kinds of plants grown, oats and peas were most highly susceptible to manganese deficiency, and barley, potatoes, and mangolds slightly less so; willows highly susceptible to iron deficiency, but symptoms on willows were characteristic of manganese deficiency in fruit trees and manganese deficiency symptoms in Boysenberry looked on as characteristic of iron deficiency in fruit trees, **1944,** III, 70. **The cure of deficiencies of iron or manganese,** by S. G. Thompson:

Mineral deficiencies–*continued*

injection is recommended when deficiencies are serious, otherwise either summer or possibly winter sprays, **1944,** IV, 119. In spraying against mineral deficiencies the more severe the deficiency the more necessary it is to spray early in the life of the plant, to spray more than once for manganese deficiency, and the concentration of the spray must be decreased as the season advances; an increase in yield from spraying with a particular element appears to be conditional on the presence of a right amount of another element; spraying potatoes with manganese deficiency with manganese gave definite improvement in leaf colour, with zinc sulphate also slight increase in yield, but with manganese and zinc gave large increase in yield; cobalt has so far brought no improvement in any of the numerous injections made into plants, **1945,** II, 29. **Mineral deficiencies in agricultural and horticultural crops. II,** by W. A. Roach: reviews present position and summarizes the main conclusions from four years' work at East Malling; suggestions are made as to future work, **1945,** III, 83. **Physiological effects of trace elements,** by B. D. Bolas: injection of manganese sulphate in lateral leaflets of potatoes suffering from manganese deficiency resulted in an increased assimilation rate in comparison with corresponding leaflets on the other side of the leaf, **1945,** III, 89. Notes on physiological effects of trace elements, **1946,** II, 32. Significant increase in dry weight per unit area of injected leaflets over controls due to manganese; no increase of photosynthesis obtained from manganese by injecting it, **1947,** II, 35. General notes on deficiencies, **1949,** II, 38. **The application of trace elements to alkaline soils: a preliminary note,** by Anne V. Delap: incorporation in alkaline soil of peat soaked in water or in solutions of 0·1% or 1% of manganese sulphate respectively gave improved growth of cereals, the effect being greater the heavier the application of manganese sulphate, **1949,** III, 116.

,, nutrition — *see also under* Mineral composition, apple trees; Mineral deficiencies. **The role of mineral nutrition in the rootstock-scion effect: a progress report,** by W. A. Roach with appendices on methods of analysis, by A. C. Mason and F. H. Vanstone, **1946,** III, 88. Effect of soil, manuring, cultivation, and rootstock on mineral status of fruit trees, **1947,** II, 35; **1949,** II, 38. Effect on an ecological community —spraying or not spraying with manganese made all the difference between almost weedless crop of wheat and a dense growth of weeds, **1949,** II, 38.

,, oil — method of conserving fungi, **1951,** II, 40.

Minerals in plants — *see under* Analysis; Mineral deficiencies.

Miner, dipterous, in plums — *see under* Plum Cambium Miner.

Mint Rust — notes on, **1926-27** (S), III, 86.

Minute Lacewing — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Mites–

general — *see also under* common names of mites (for full list of names appearing in Index see pages 158-168); Beneficial insects and mites; Insects and mites.
Petrobia lapidum Hommer, a mite injurious to cultivated onions, **1943,** III, 65.

Phytoptid — world catalogue of, **1952,** II, 41.

Molybdenum — in apple rootstocks, **1929,** II, 63; **1928-29-30** (S), III, 101.

Molybdenum blue — method of estimating phosphorus, **1943,** II, 22.

Monilia cinerea — *see under* Brown Rot.
,, *fructigena* — *see under* Brown Rot.
Mordella fasciata — *see under* Beetles, general.
Morello cherries — *see under* Cherries.
Mosaic Disease–
apples — *see under* Apple Mosaic.
blackberries — *see under* Blackberry Mosaic.
hops — *see under* Cobb's Mosaic; Hop Mosaic Disease.
plums — *see under* Plum Mosaic.
raspberries — *see under* Raspberry Mosaic.
Mottle, cherries — *see under* Cherry Mottle.
Mould, Blue — *see under* Blue Mould.
,, Grey — *see under* Grey Mould.
,, hops — *see under* Hop Mould.
Mulberry Bacterial Blight — **Mulberry Bacterial 'Blight'**, by H. Wormald: due to *Bacterium mori*, **1924,** III, 120.
,, Canker and Dieback — *see under* Canker and Dieback, mulberries.
Mulching– — *see also under* Manuring.
dung — trial on apple trees, **1951,** II, 26; **1952,** II, 22.
straw — preliminary investigation of use of permanent straw mulch as a system of management for apples, **1950,** II, 22. Weedkiller tests on raspberries with straw mulch as an alternative non-cultivation system; compared with cultivation as system of management for black currants, **1950,** II, 26. Straw mulch compared with other treatments on Laxton's Superb on M.II; air temperatures and straw mulch on soft fruit, **1951,** II, 27. Trial with raspberries; suggestion that on black currants straw mulches may have important effect on soil moisture relations, **1951,** II, 30. Soil management trials with straw mulch on apples, **1952,** II, 22. Trial with raspberries, **1952,** II, 26. Suggestion that use of a straw mulch round trees for an initial period in young orchards that are grassed down may have valuable advantages, **1953,** II, 25.
Mullein Leaf Bug — *see under* False Tarnished Plant Bug.
Mushroom mites — observations on, **1928-29-30** (S), III, 193.
Muslin Moth — observations on, **1952,** III, 147.
Mycorrhiza–
apples — notes on, **1946,** II, 17; **1947,** II, 22; **1950,** II, 21; **1951,** II, 26; **1953,** II, 28.
general — mycorrhiza found in 'fine roots' of apple, pear, quince, cherry, peach, apricot, fig, hop, raspberry, loganberry, and strawberry, **1946,** II, 17.
strawberries — notes on, **1946,** II, 17; **1950,** II, 21; **1951,** II, 26; **1952,** II, 26, 34; **1953,** II, 28. Various trials on strawberry mycorrhiza, **1948,** II, 24. Effect of different treatments on mycorrhizal development, **1949,** II, 22.
Mycosphaerella fragariae, Ramularia stage — *see under* Leaf Spot, strawberries.
,, *ribis* — *see under* Leaf Spot, currants, Septoria.
,, *sentina* — *see under* Leaf Fleck, pears.
Myxosporium corticola — *see under* Surface Canker, apples.

Myzus ascalonicus — *see under* Shallot Aphid.

,, *cerasi* — *see under* Cherry Blackfly.

,, *festucae* — *see under* Oat Aphid.

,, *persicae* — *see under* Peach-Potato Aphid.

NAA (α-Naphthaleneacetic acid) — *see also under* Abscission studies; Apples, picking; Blossom thinning; Crown Gall; Fruit drop; Fruit thinning, apples; Growth substances; Leaf fall; Pollination and pollen influence; Propagation, cuttings, stem; Propagation, hops; Storage, apples.
use with lime-sulphur or Bordeaux, **1941,** II, 20. Possible harmful effects, **1941,** II, 20; **1942,** II, 20. Addition of lead arsenate to NAA caused no appreciable reduction in activity of the acid as measured by coleoptile test, **1944,** II, 24. Effect on raspberry root growth, **1947,** II, 52. Use with lead arsenate, dispersible sulphur, or summer petroleum, **1947,** III, 101; **1948,** II, 35. Various exploratory experiments on abscission, **1949,** II, 33. Possibility of using *Lemna* sp. for abscission studies being examined, **1950,** II, 31. Unlikely that blossom thinning properties of an NAA spray are due to direct effect on fertilization, **1951,** II, 35. Use with mercurated lead arsenate, **1951,** III, 108.

NAA, amide of — testing of, **1942,** II, 20, III, 48.

Naphthalene — soil disinfectant against Verticillium Wilt, **1942,** II, 29.

α-Naphthaleneacetic acid — *see under* NAA.

Nasonovia ribis-nigri — *see under* Lettuce Aphid.

National Fruit Trials, Brogdale — notes on, **1953,** II, 30.

Necrotic ring-spot viruses, cherries — *see under* Cherry Necrotic Ring-spot.

Nectria cinnabarina — *see under* Coral Spot.

,, *galligena* — *see under* Apple Canker; Eye Rot, apples; Pear Canker.

Nematodes — *see under* Eelworms.

Nematus olfaciens — *see under* Black Currant Sawfly.

,, *ribesii* — *see under* Common Gooseberry Sawfly.

Nemoicus oblongus — *see under* Brown Leaf Weevil.

Neoseiulus macrophilus — notes on, **1949,** III, 130.

Nepticula malella — *see under* Crab Leaf Miner.

Netting against frost — *see under* Frost damage investigations, general.

Nettlehead, hops — notes on, **1938,** III, 172; **1939,** II, 35, III, 62; **1940,** II, 30; **1941,** II, 27, III, 42; **1942,** II, 29; **1944,** IV, 132; **1946,** II, 45; **1949,** IV, 175. Presence of Nettlehead in Research Station hops, **1914-15,** 8. Manurial trials showed no difference in incidence of disease, **1942,** II, 29. Grafting results, **1944,** II, 31. Natural vectors, **1944,** II, 32; **1945,** II, 42; **1949,** II, 49. Testing of hops against, **1945,** II, 42. Symptom masking occurring in warm weather, **1947,** II, 47. **Aerial surveys of the incidence of Nettlehead disease of the hop on former hedgerow and pasture sites,** by W. G. Keyworth and Margaret M. Hitchcock: plants showing Nettlehead symptoms are sometimes especially concentrated on sites of former hedgerows and pasture fields, **1947,** III, 153. Enations shown on most infected plants, but not all; Hop Flea Beetle tested as vector, **1948,** II, 49. Almost complete symptom masking in hot weather; varietal resistance to, **1949,** II, 49. Attempts to transmit by soil failed, **1951,** II, 41. Early Prolific as indicator variety for, **1952,** II, 35. **The natural spread of Nettlehead disease of hops,** by J. T. Legg, **1952,** III, 123.

Neurotoma flaviventris — *see under* Social Pear Sawfly.

,, *saltuum* — *see under* Social Pear Sawfly.

Nicotine — *see also under* Apple Blossom Weevil; Apple Sawfly; Apple Sucker; Bean Aphid; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite; Codling Moth; Common Gooseberry Sawfly; Common Green Capsid; Earwigs; Hop-Damson Aphid; Leaf-curling Plum Aphid; Pear Slug Sawfly; Pear Sucker; Plum Sawfly; Spraying, general; Strawberry Aphid; Strawberry aphids; Vapourer Moth; Woolly Aphid.
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Nitrosopyrazole — *see under* Apple Scab.

Nola cucullatella — *see under* Short-cloaked Moth.

Norfolk Giant — *see under* Raspberries, varieties.

Northern Drab Moth — observations on, **1942,** III, 65.

Northern Spy — *see under* Rootstocks, apple; Rootstocks, resistance to Woolly Aphid.

Northern Winter Moth — observations on, **1944,** III, 79.

Notocelia uddmanniana — *see under* Bramble Shoot Moth.

Nuclear Stocks Propagation Schemes — *see under* Certification schemes.

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Nut(s)–

- Aphid — observations on, **1947,** III, 138; **1948,** III, 105.
- Brown Rot — *see under* Brown Rot, cobnuts and filberts.
- Brown Soft Scale — *see under* Brown Scale.
- Bud Moth — probably controlled by a 5% DDT dust, **1947,** III, 136.
- Bud Tortrix — *see under* Nut Bud Moth.
- Drop — *see under* Brown Rot, cobnuts and filberts.
- Gall Mite — observations on, **1928-29-30** (S), III, 192.
- Leaf Blister Moth — observations on *Lithocolletis coryli*, **1950,** III, 144.
- Leaf Roller — observations on, **1947,** III, 135.
- Leaf Sawfly — *see under* Hazel Sawfly.
- walnuts — *see under* Walnuts.

Nutmeg Moth — observations on, **1947,** III, 137.

Nut Mildew — *see under* Cobnut Mildew.

Nutrient mist — *see under* Spray culture.

Nutritional studies — *see also under* Cover cropping; Manuring; Mineral deficiencies; Mineral nutrition; Spray culture; Water culture.
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Nygmia phaeorrhoea — *see under* Brown-tail Moth.

'Oak Leaf' of hops — *see under* Hops, 'Oak Leaf'.

Oak Pinhole Borer — observations on, **1949,** III, 126.

Oat Aphid — observations on, **1935,** III, 165.

Oat-Apple Aphid — observations on, **1946,** III, 128; **1948,** III, 105; **1949,** III, 129; **1950,** III, 146; **1953,** III, 166.

Oats — *see under* Corn crops and trials.

October Pippin apple — *see under* Apples, varieties, October Pippin.

Oligonychus ulmi — *see under* Fruit Tree Red Spider Mite.

Oligota flavicornis — *see under* Rove Beetle.

Onion Downy Mildew — notes on, **1926-27** (**S**), III, 118.

Onions — *see also under* Manuring, onions.
mite injurious to, **1943,** III, 65.

Ontario plum — *see under* Fruit thinning, plums; Plums, varieties.

Operophtera boreata — *see under* Northern Winter Moth.

,, *brumata* — *see under* Winter Moth.

Ophonus pubescens — *see under* Strawberry Seed Beetle.

Oppia nitens — *see under* Mushroom mites.

Organic analysis — *see under* Analysis, chemical, organic.

,, fungicides — *see under* Fungicides.

,, plant constituents — *see under* Analysis, chemical, organic.

Organophosphorus insecticides, fungistatic activity — *see under* Insecticides.

Orgyia antiqua — *see under* Vapourer Moth.

Orius majusculus — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Orthosia incerta — *see under* Clouded Drab Moth.

Osier Aphid — *see under* Large Willow Aphid.

Otiorrhynchus ovatus — *see under* Strawberry Root weevils.

,, *rugosostriatus* — *see under* Strawberry Root weevils.

,, *singularis* — *see under* Clay-coloured Weevil.

,, *sulcatus* — *see under* Vine Weevil.

Ovicides and ovicide mechanism — *see also under* specific insects and chemicals concerned; Acaricides; Azobenzene; Azoxybenzene; Winter washes.
notes on, **1925,** II, 73; **1926,** II, 63; **1927,** II, 67; **1931,** II, 44; **1932,** II, 47; **1935,** II, 66; **1936,** II, 71; **1937,** II, 83, 85; **1938,** II, 83, 85; **1939,** II, 32; **1940,** II, 26; **1941,** II, 24, 25; **1942,** II, 25; **1943,** II, 26; **1944,** II, 29; **1945,** II, 39; **1946,** II, 41; **1947,** II, 43; **1948,** II, 44; **1949,** II, 45; **1950,** II, 44; **1951,** II, 46; **1952,** II, 42; **1953,** II, 46. Toxic properties of low temperature carbonization tar oils, **1935,** II, 66. Many ovicides do not inhibit embryo develop-

Ovicides and ovicide mechanism–*continued*

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Pachybasium candidum — *see under* Black Root Rot, strawberries.

Pale Brindled Beauty Moth — observations on, **1941,** III, 47.

Pallid Mite — *see under* Strawberry Mite.

Papery Bark Canker — *see also under* Silver Leaf.
notes on, **1936,** II, 64; **1939,** III, 59; **1940,** III, 56. *Stereum purpureum* suspected as cause, **1935,** II, 58. Some evidence for assuming cause is *Stereum purpureum*, **1935,** III, 143. On pear infected with *Stereum purpureum*, **1935,** III, 157. Of apples; possibly caused by infection with Silver Leaf fungus, **1937,** II, 75. Association with Silver Leaf, **1943,** II, 24. **Silver Leaf and Papery Bark in apple trees,** by H. B. S. Montgomery and H. Wormald, **1943,** III, 51.

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Parathion (E605) — *see also under* Apple Sawfly; Beneficial insects and mites; Black Currant Leaf Midge; Fruit Tree Red Spider Mite; Hop-Damson Aphid; Leaf-curling Plum Aphid; Ovicides; Pear Sawfly; Raspberry Cane Midge; Red Spider Mite; Spray damage; Strawberry Aphid; Summer Fruit Tortricid; Tortricid moths; Winter Moth; Woolly Aphid.
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Parsley-leaved Berry — *see under* Blackberries.

Parsnip Downy Mildew — notes on, **1926-27** (S), III, 118.

Pea(s)–

and Bean Weevil — observations on, **1946,** III, 125.

Experimental Farm — acreage, cropping, and general notes, **1941,** I, 12; **1945,** I, 14; **1946,** I, 13; **1947,** I, 17; **1948,** I, 19; **1949,** I, 18; **1950,** I, 19; **1951,** I, 20; **1952,** I, 18; **1953,** I, 19.

Pea(s)–*continued*

Mildew — notes on, **1926-27** (S), III, 118.

mineral deficiencies — *see under* Mineral deficiencies.

Pod Spot — notes on, **1925** (S), III, 84.

Peach(es)–

Aphid — observations on, **1944,** III, 82; **1946,** III, 128.

aphids — *see under* Peach Aphid; Peach-Potato Aphid.

Bacterial Canker — *see under* Bacterial Canker, peaches.

breeding — *see under* Breeding, top fruits, peaches.

Brown Rot — *see under* Brown Rot, peaches.

chlorosis — *see under* Chlorosis.

Experimental Farm — acreage, cropping, and general notes, **1952,** I, 16; **1953,** I, 18.

frost damage investigations — *see under* Frost damage investigations, peaches.

growing of, general — *see also under* Pruning, peaches; Rootstocks, peach.
notes on, **1949,** II, 24, 50; **1951,** II, 28, 50.

incompatibility — *see under* Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

layer beds, wilting in — *see under* Layer beds, *Prunus* spp., wilting in.

-Potato Aphid — observations on, **1950,** III, 146.

propagation — *see under* Propagation, peaches.

pruning — *see under* Pruning, peaches.

rootstocks — *see under* Rootstocks, peach.

rot on — caused by *Rhizopus nigricans*, **1926-27** (S), III, 82.

Rubbery Wood — peach possible indicator for, **1952,** III, 131.

Silver Leaf — *see under* Silver Leaf, peaches.

varieties–

collections and trials — notes on, **1945,** II, 19; **1948,** II, 27; **1949,** II, 26.

virus diseases — *see also under* Propagation, virus diseases.
notes on, **1951,** II, 41; **1952,** III, 131.

Pear(s)–

Aleyrodes — *see under* Whiteflies.

aphids — *see also under* Black Bean Aphid; Brown Leaf-curling Pear Aphid; Green Apple Aphid; Oat-Apple Aphid; Pear-Bedstraw Aphid; Pear-Coltsfoot Aphid; Pear-Hogweed Aphid; Pear Woolly Aphid; Potato Aphid.
life-cycle of three species of 'blue bug' associated with pear, **1942,** II, 24.

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blossoming — *see under* Blossoming, general; Pears, blossom, non-setting of.

blossom, non-setting of — notes on, **1931,** II, 24; **1932,** II, 26; **1933,** II, 30; **1934,** II, 38; **1935,** II, 33; **1936,** II, 37; **1937,** II, 45, 56; **1938,** II, 45. Striking difference in shoot growth on making branch injection with water, urea, and urea plus phosphate to test effect on June drop, **1936,** II, 38. **Studies in the non-setting of pears. II. The effect of weather conditions,** by D. N. Srivastava: shelter in the form of lewing would facilitate setting of the blossoms, **1937,** III, 128. **Studies in the non-setting of pears. III. The effect of the flower characters,** by

Pear(s)–blossom, non-setting of–*continued*

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breeding — *see under* Breeding, rootstocks, pear; Breeding, top fruits, pears.

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cropping — *see also under* Pears, Experimental Farm.
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double-shield budding — *see under* Double-working, pears.

double-working — *see under* Double-working, pears.

dwarf pyramids — *see under* Intensive fruit culture, dwarf pyramids.

espaliers — *see under* Intensive fruit culture, espaliers.

Experimental Farm — acreage, cropping, and general notes, **1927,** I, 32; **1929,** I, 26; **1930,** I, 33; **1931,** I, 15; **1932,** I, 17; **1933,** I, 19; **1934,** I, 24; **1935,**

Pear(s)–Experimental Farm–*continued*

I, 20; **1936,** I, 19; **1937,** I, 21; **1938,** I, 25; **1939,** I, 14; **1940,** I, 11; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 12; **1946,** I, 11; **1947,** I, 15; **1948,** I, 17; **1949,** I, 16; **1950,** I, 15; **1951,** I, 18; **1952,** I, 16; **1953,** I, 17.

frameworking — *see under* Grafting.

frost damage investigations — *see under* Frost damage investigations, pears.

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incompatibility — *see under* Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

Internal Breakdown — *see under* Functional disorders, Internal Breakdown.

Leaf Blight — *see under* Leaf Blight, pears.

,, Blister — *see under* Leaf Blister, pears.

,, Fleck — *see under* Leaf Fleck, pears.

,, Midge — control by DDT emulsion 15% at rate of 3 pints to 100 gal. water, **1953,** III, 166.

,, Spot — *see under* Leaf Blight, pears; Leaf Fleck, pears.

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Magdalis — *see under* Pear Weevil.

manuring — *see under* Manuring, pears.

Midge — controlled by ground cultivation, June to July, 1929, **1928-29-30** (S), III, 196.

Mildew — notes on, **1940,** III, 57.

Papery Bark Canker — *see under* Papery Bark Canker.

Pink Rot — *see under* Pink Rot.

pollination — *see under* Pears, blossom, non-setting of; Pollination and pollen influence.

propagation — *see under* Propagation, pears.

pruning — *see under* Pruning, pears.

rootstocks — *see under* Rootstocks, pear.

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Sawfly, Social — *see under* Social Pear Sawfly.

Scab — notes on, **1926-27** (S), III, 113; **1931,** II, 39; **1932,** II, 42, III, 81; **1933,** II, 50; **1938,** III, 168; **1942,** IV, 105; **1951,** II, 46, 48; **1952,** II, 44; **1953,** II, 37. Associated with Pear Canker, **1926-27** (S), III, 92. **Spraying trials against Pear Scab (*Venturia pirina*): some practical and theoretical aspects of the interpretation of the results,** by M. H. Moore: Bordeaux mixture kept fruits cleaner by giving better control of late infection, **1932,** III, 99. Recent work on, **1938,** IV, 253. Results so far indicate marked interspecific nutritional differences and wide variation between isolates in response to inhibitors, **1950,** II, 38. Studies of isolates and determination of relative pathogenicities of six isolates of Apple Scab and Pear Scab, **1951,** II, 40. Investigations on chemical aspects of resistance to Pear Scab, **1952,** II, 32, 34.

Pear(s)–*continued*

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soil moisture variation — in pear orchard, **1936,** III, 110.

spray damage — *see under* Spray damage.

stem-building — notes on, **1952,** II, 22.

Stony Pit — *see under* Stony Pit, pears.

Sucker — *see also under Cladosporium herbarum.*
observations on, **1941,** III, 50; **1944,** III, 81; **1951,** III, 159; **1952,** II, 39. Nicotine spray effective against; DDT and BHC ineffective, **1952,** III, 149.

varieties– — *see also under* Pears, Conference.

collections and trials — notes on, **1931,** II, 26; **1941,** II, 16; **1942,** II, 16; **1944,** II, 19; **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1951,** II, 29.

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virus diseases — *see also under* Pear, Vein-banding; Propagation, virus diseases; Stony Pit, pears.
quince plants as indicators, **1951,** II, 41. Search for indicators more sensitive than quince, **1952,** II, 36.

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Penicillium expansum — *see under* Blue Mould.

Penman and Smith — method of estimating soil moisture deficits, **1951,** II, 27; **1952,** IV, 171.

Pentachlornitrobenzene — strawberries after heat treatment twice dusted at weekly intervals with 20% as a fungicide, **1952,** III, 128.

Pentatoma rufipes — *see under* Forest Bug.

Pentatrichopus fragaefolii — *see under* Strawberry Aphid.

Perle de Prague — *see under* Strawberries, varieties.

Peronea comariana — *see under* Strawberry Tortrix Moth.

Peronospora destructor — *see under* Onion Downy Mildew.

,, *schleideni* — *see under* Onion Downy Mildew.

Petham Golding hop — *see under* Hops, Petham Golding.

Petrobia lapidum — *see under* Mites.

Petroleum oil sprays — *see also under* Winter washes, petroleum oil.
used as a summer spray with NAA, **1947,** III, 101; **1948,** II, 35.

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Phenomenal Berry–*continued*

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Phloem — *see under* Histological investigations; Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

Phoma betae — *see under* Beetroot, rot.

,, spp. — *see also under* Stalk-End Rot, apples.
on quince, **1924,** III, 116.

Phorodon humuli — *see under* Hop-Damson Aphid.

Phosgene — *see under* DDT.

Phosphorus — *see also under* Analysis, chemical, inorganic, phosphorus; Biennial bearing; Manuring; Plant injection.
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,, *violaceum* — *see under* Blackberry Rust.

Phyllactinia corylea — *see under* Cobnut Mildew.

,, *suffulta* — *see under* Cobnut Mildew.

Phyllobius argentatus — *see under* Silver-green Leaf Weevil.

,, *artemisiae* — *see under* Beetles, general.

,, *maculicornis* — *see under* Green Leaf Weevil.

,, *oblongus* — *see under* Brown Leaf Weevil.

Phyllocoptes fockeui — *see under* Plum gall mites.

,, *massalongoi* — *see under* Gall mites.

,, *schlechtendali* — *see under* Leaf and Bud Mite.

Phyllopertha horticola — *see under* Garden Chafer.

Phyllosticta angulata — *see under* Angular Leaf Spot.

,, *argyrea* — *see under* Leaf Spot, *Elaeagnus.*

,, *dahliaecola* — *see under* Leaf Blotch, dahlias.

,, *grandimaculans* — *see under* Strawberry Leaf Blotch.

,, *syringae* — *see under* Leaf Spot, lilac.

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Phytophthora cactorum — *see under* Black Root Rot, hops; Collar Rot, apples.

,, *fragariae* — *see under* Red Core Disease.

,, *infestans* — *see under* Potato Blight; Tomato Blight.

Phytophthora Root Rot — *see under* Black Root Rot, hops.

,, sp. — *see under* Black Root Rot, hops

Phytoptid mites — *see under* Mites, Phytoptid.

Phytoptus avellanae — *see under* Nut Gall Mite.

,, *essigi* — *see under* Blackberries, Red Berry Disease.

,, *gracilis* — *see under* Raspberry Leaf and Bud Mite.

,, *phloeocoptes* — *see under* Plum gall mites.

,, *ribis* — *see under* Black Currant Gall Mite.

,, *vitis* — *see under* Vine Leaf Blister Mite.

Phytotoxicity trials — *see under* Spray damage.

Picking, fruit and hops — *see under* Apples, picking; Farm, Experimental, reports (as regards fruit and hops on Experimental Farm); Hops, cultural, picking, and training trials; Pears, Conference.

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Piesma capitata — *see under* Lacewing Bug.

Pilobolus sp. — notes on occurrence on Arum lilies (*Richardia* sp.), **1926-27** (S), III, 87.

Pine Blister Rust — notes on, **1917-18,** 9.

Pink Rot — notes on, **1925** (S), III, 79; **1926-27** (S), III, 80; **1939,** III, 60. Usually on apples kept in store, but rarely on scab spots on pears, **1938,** III, 168.

Pinus strobus — *see under* Weymouth Pine.

Pith Moth — observations on, **1928-29-30** (S), III, 198; **1946,** III, 126; **1953,** III, 163.

Plantations, Experimental — *see under* Experimental plantations.

Plant cells — freezing in, **1952,** II, 24.

,, diseases — *see under* Diseases, fruit and plant.

,, extracts — extracts of *Crepis taraxacifolia*, *Reseda lutea*, *Lindera benzoin*, and *Spiraea arunchus* showed marked fungicidal activity, **1942,** II, 26. From Manchester University, tested for ability to inhibit abscission, **1951,** II, 35.

Planting(s) — *see also under* Apples, plantations; Scion rooting.
on Experimental Farm, **1930,** I, 34; **1932,** I, 11; **1933,** I, 14; **1934,** I, 18; **1935,** I, 16; **1936,** I, 15; **1937,** I, 15; **1938,** I, 18; **1945,** I, 13; **1947,** I, 16; **1948,** I, 18; **1949,** I, 17; **1950,** I, 17; **1951,** I, 19; **1952,** I, 17; **1953,** I, 18. **The planting situation,** by N. B. Bagenal, **1931,** IV, 67. **Fruit planting policy with special reference to quality of material,** by R. G. Hatton, **1942,** IV, 90. **A survey of planting problems,** by R. G. Hatton, **1944,** IV, 96.

Plant injection — for main references to plant injection as a means for diagnosing and curing mineral deficiencies *see under* Mineral deficiencies. *See also under* Apples, keeping quality; Biennial bearing; Functional

Plant injection–*continued*

disorders, Bitter Pit; Pears, blossom, non-setting of; Rosy Apple Aphid.
notes on, **1937,** II, 71; **1940,** II, 22; **1941,** II, 21. Enough of any soluble artificial manure may be injected in two days in summer to produce as great an increase in growth and vigour as that produced by the heaviest dressing ever applied to the soil without causing damage to tree; maximum safe amount is less in winter than in summer, **1933,** II, 45. **Tree injection—a progress report,** by W. A. Roach, **1933,** III, 137. The injection of Cox with solution of 0·25% dipotassium hydrogen phosphate plus 0·25% urea gave marked improvement in foliage texture, an effect on fruit colour, and an increase in wood growth, **1934,** II, 57. Cure of chlorosis in peach trees by injection of iron salts, **1934,** II, 58, III, 139. **Tree injection—invigoration by the injection of fertilizers: a progress report,** by W. A. Roach: Cox when injected with complete fertilizer doubled amount of shoot growth; increase greater in trees absorbing larger amounts of fertilizer than those absorbing less; attacks by Apple Leafhopper and Fruit Tree Red Spider markedly less in fertilizer-injected trees, **1934,** III, 135. Tree injection notes; possibility of varying at will the organic composition of fruit, and so possible to make experiments on connection between chemical composition and storage quality, disease resistance, etc., **1935,** II, 56. **Leaf injection,** by W. A. Roach, **1935,** III, 134. **Tree injection, 1935 experiments: a progress report,** by Joan Hearman, B. F. G. Levy, and W. A. Roach: delay in appearance of symptoms of damage apparently due to leaves remaining in an 'immature' condition for some weeks after expansion, **1935,** III, 137. Striking difference in shoot growth on making branch injection with water, urea, and urea plus phosphate to test effect on June drop, **1936,** II, 38. Extra caution needed when injecting trees after a late frost; injection of individual branches of pear trees with a solution containing 0·25% urea and 0·25% dipotassium hydrogen phosphate gave marked increase in growth, **1936,** II, 61. **The injection of individual branches of a tree independently of each other,** by W. A. Roach: selected branches of a single tree may be injected independently, each with a different solution, **1936,** III, 160. **The injection of individual branches of a spur-pruned pear tree: a progress report,** by D. N. Srivastava and W. A. Roach, **1936,** III, 167. **The injection of individual branches of a tree which has not been spur-pruned: a progress report,** by P. K. Sen: urea caused big increases in shoot growth (the 'off' year trees) and there were smaller increases resulting from the injection of urea plus potassium salts in both 'on' and 'off' year trees; glucose caused a decrease of shoot growth; toxic effect of urea phosphate was much more severe on the branches of the 'on' year trees than on those of the 'off' year trees, **1936,** III, 171. **The injection of whole trees,** by W. A. Roach: practical details are given for injecting trees with liquid through holes bored in their stems, **1936,** III, 174. Experiment to decide if making good zinc deficiency lessens susceptibility to Apple Scab, **1941,** II, 21. Attempts to control Silver Leaf in plums by injection of disinfectants, **1941,** II, 21; **1944,** II, 26. Best time to look for response to injection of apple is in fourteen days, potato seven to ten days, tomato fourteen to twenty-one days, **1942,** II, 21. Liquid injection not likely to bring about permanent cure of Silver Leaf, **1943,** II, 24. Cobalt injection, **1945,** II, 29. **Tree injection. I. The estimation of dosage in relation to tree size,** by B. F. G. Levy, **1946,** III, 99. **Tree injection. II. Methods for overcoming resistance to absorption of liquids,** by B. F. G. Levy: three

Plant injection–*continued*

methods of overcoming resistance are given, **1946,** III, 104. **Tree injection. III. Re-invigoration of debilitated trees,** by B. F. G. Levy, **1946,** III, 107. Improvements in interveinal method, **1949,** II, 38. **An interveinal injection needle,** by Anne V. Delap, **1949,** III, 118. Zinc deficiency in Edward VII apples diagnosed by plant injection, **1950,** II, 36. Effect of injecting apple trees with potassium, phosphate, or urea, **1951,** II, 38. Increase in growth of raspberries in each leaf on side permeated by copper, **1952,** II, 32.

Plant Pathology Section — general review of research work, **1924,** II, 107; **1925,** II, 61; **1926,** II, 57; **1927,** II, 53; **1928,** II, 97; **1929,** II, 67; **1930,** II, 87; **1931,** II, 36; **1932,** II, 39; **1933,** II, 47; **1934,** II, 60; **1935,** II, 57; **1936,** II, 64; **1937,** II, 74; **1938,** II, 75; **1939,** II, 28; **1940,** II, 23; **1941,** II, 22; **1942,** II, 22; **1943,** II, 23; **1944,** II, 26; **1945,** II, 32; **1946,** II, 35; **1947,** II, 37; **1948,** II, 39; **1949,** II, 40; **1950,** II, 38; **1951,** II, 40; **1952,** II, 34; **1953,** II, 37.

,, Physiology Section — general review of research work, **1922,** 24; **1923,** II, 87; **1924,** II, 103; **1925,** II, 55; **1926,** II, 53; **1927,** II, 49; **1928,** II, 87; **1929,** II, 59; **1930,** II, 77; **1931,** II, 32; **1932,** II, 36; **1933,** II, 43; **1934,** II, 54; **1935,** II, 52; **1936,** II, 57; **1937,** II, 67; **1938,** II, 67; **1939,** II, 25; **1940,** II, 21; **1941,** II, 20; **1942,** II, 20; **1943,** II, 21; **1944,** II, 23; **1945,** II, 27; **1946,** II, 29; **1947,** II, 32; **1948,** II, 35; **1949,** II, 33; **1950,** II, 30; **1951,** II, 34; **1952,** II, 29; **1953,** II, 32.

,, Protective Chemistry Section — (prior to 1943 known as Insecticides and Fungicides Section). general review of research work, **1935,** II, 66; **1936,** II, 71; **1937,** II, 83; **1938,** II, 83; **1939,** II, 32; **1940,** II, 26; **1941,** II, 24; **1942,** II, 25; **1943,** II, 26; **1944,** II, 29; **1945,** II, 39; **1946,** II, 41; **1947,** II, 43; **1948,** II, 44; **1949,** II, 45; **1950,** II, 44; **1951,** II, 46; **1952,** II, 42; **1953,** II, 46.

,, sampling — *see under* Statistical studies.

,, variation — *see under* Statistical studies.

Plasmopara nivea — *see under* Parsnip Downy Mildew.

Platypus cylindrus — *see under* Oak Pinhole Borer.

Plectodiscella veneta — *see under* Cane Spot.

Plesiocoris rugicollis — *see under* Apple Capsid.

Plot lay-out — *see under* Statistical studies.

Plum(s)–

aphids — *see under* Leaf-curling Plum Aphid; Mealy Plum Aphid.

Bacterial Canker — *see under* Bacterial Canker, plums.

bacteriosis — *see under* Bacterial Canker, plums.

Bark Split — notes on, **1952,** IV, 183.

blossoming — *see under* Blossoming, general.

branch breakage — in relation to tree form, **1952,** I, 17.

breeding — *see under* Breeding, rootstocks, plums; Breeding, top fruits, plums.

Brown Rot — *see under* Brown Rot, plums.

bud-perpetuated diseases — non-virus, **1952,** IV, 183.

Cambium Miner — notes on, **1952,** II, 40; **1953,** II, 44. **Note on a plum cambium miner (*Agromyzidae*),** by N. R. Lee: describes damage to young plum trees; pith flecks caused by miner with little direct effect on tree growth, **1952,** III, 78.

Casebearer — *see under* Apple and Plum Casebearer.

and cherry bark beetles — *see under* Fruit Bark Beetle; Large Fruit Bark Beetle.

Plum(s)–*continued*

Common Mussel rootstocks — disease of, **1932,** III, 83.

Concentric Ring Spot — *see under* Plum Ring Spot and Shot Hole.

cropping — *see under* Plums, Experimental Farm; Plums, stem-building; Plums, varieties.

crotch angles — *see under* Crotch angles, control of.

Czar Spot — *see under* Czar Spot.

Dieback — *see under* Bacterial Canker, plums.

double-working — *see under* Double-working, plums.

Experimental Farm — acreage, cropping, and general notes, **1924,** I, 29; **1925,** I, 31; **1926,** I, 29; **1927,** I, 31; **1928,** I, 28; **1929,** I, 27; **1930,** I, 33; **1931,** I, 14; **1932,** I, 16; **1933,** I, 18; **1934,** I, 23; **1935,** I, 20; **1936,** I, 18; **1937,** I, 22; **1938,** I, 24; **1939,** I, 15; **1940,** I, 11; **1941,** I, 11; **1942,** I, 11; **1943,** I, 11; **1944,** I, 13; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 18; **1949,** I, 16; **1950,** I, 16; **1951,** I, 18; **1952,** I, 16; **1953,** I, 17.

fibres — *see under* Fibres, length of.

Fomes Disease — *see under* Fomes Disease.

frameworking — *see under* Grafting.

frost damage investigations — *see under* Frost damage investigations, plums.

Fruit Moth — observations on, **1935,** III, 166; **1943,** III, 60; **1949,** IV, 172.

fruit splitting — *see under* Fruit splitting, plums.

gage trial — *see under* Plums, varieties.

gall mites — observations on *Phyllocoptes fockeui* and *Phytoptus phloeocoptes*, **1942,** III, 68; **1953,** III, 167.

growing, general — **Plum growing in the light of recent research: a summary of staff talks given at the Annual Members' Day held at East Malling Research Station on August 31st, 1939,** by N. B. Bagenal: includes notes on rootstocks, frameworking, thinning, grading, storing, diseases, pruning, and spraying, **1939,** IV, 79.

incompatibility — *see under* Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

layer beds, wilting in — *see under* Layer beds, *Prunus* spp., wilting in.

leafhoppers — *see under* Cherry Leafhopper; Leafhoppers, plums.

Leaf Mite — *see under* Plum gall mites.

,, Roll — notes on, **1952,** IV, 182.

,, Sawfly — observations on, **1944,** III, 81.

,, Spot — *see under* Bacterial Canker, plums.

Line Pattern — *see under* Line Pattern, plums.

Maggot, Red — *see under* Plum Fruit Moth.

manuring — *see under* Manuring, plums.

marketing — *see under* Marketing, fruit.

Mosaic — notes on, **1952,** III, 131, IV, 182.

Ontario — *see under* Fruit thinning, plums; Plums, varieties.

propagation — *see under* Propagation, plums.

Prune Dwarf — *see under* Prune Dwarf, plums.

pruning — *see under* Pruning, plums.

Ring Spot and Shot Hole — transmission to apple, **1952,** III, 131. Description of, **1952,** IV, 182.

Plum(s)–*continued*

rootstocks — *see under* Rootstocks, plum.

Rust — *see under* Rust, plums.

Sawfly — notes on, **1932,** III, 112; **1933,** III, 180; **1936,** III, 226; **1942,** III, 66; **1945,** III, 95; **1946,** III, 127. Value of derris root and inefficiency of nicotine demonstrated, **1936,** II, 74. **Experiments in the control of Plum Sawfly on Czar plums,** by W. Steer and A. A. G. Hassan: derris at 0·2% (rotenone 0·004%) gave in conjunction with soap an adequate measure of control if applied at any time during the 7–10 days following petal-fall, **1937,** III, 223.

Scab — notes on, **1926-27** (S), III, 118.

Shoot Wilt — *see under* Bacterial Canker, plums; Layer beds, *Prunus* spp., wilting in.

Silver Leaf — *see under* Silver Leaf, plums.

Sooty Blotch — *see under* Sooty Blotch.

,, Mould — *see under* Sooty Mould, plums.

splitting — *see under* Fruit splitting.

spray damage — *see under* Spray damage.

stem-building — *see also under* Bacterial Canker, plums; Double-working.
in plum stem-building trials trees pruned in the spring were smaller and cropped more heavily than those pruned in the autumn, **1943,** II, 17.

storage — *see under* Storage, plums.

Stunt — notes on, **1952,** IV, 183.

thinning — *see under* Fruit thinning, plums.

toxaphene — effect of, **1951,** III, 184.

varieties–

collections and trials — *see also under* Plums, Ontario.
notes on, **1946,** II, 20; **1947,** II, 25; **1948,** II, 27; **1949,** II, 26; **1950,** II, 24; **1951.** II, 25, 29; **1953,** II, 26.

vein-banding — notes on, **1952,** III, 131.

Veinlet Clearing — notes on, **1952,** IV, 182.

Verticillium Wilt — *see under* Verticillium Wilt, plums.

virus diseases — *see also under* Bark Split, plums; Line Pattern, plums; Plum Leaf Roll; Plum Mosaic; Plum Ring Spot and Shot Hole; Plum Concentric Ring Spot; Plum Stunt; Plums, vein-banding; Plum Veinlet Clearing; Propagation, virus diseases; Prune Dwarf, plums.
notes on, **1951,** II, 41; **1952,** II, 36, III, 131; **1953,** II, 40. **Virus diseases of plums,** by A. F. Posnette, **1952,** IV, 182.

Weevil — observations on, **1944,** III, 77.

Wither Tip — *see under* Wither Tip, plums.

Podosphaera leucotricha — *see under* Apple Mildew; Medlar Mildew; Pear Mildew; Quince Mildew.

Polarograph — *see under* Analysis, polarographic.

Pollinating insects — *see under* Beneficial insects and mites, pollinators.

Pollination and pollen influence — *see also under* Pears, blossom, non-setting of.
notes on, **1950,** II, 24; **1951,** II, 29; **1952,** II, 25. Big differences in diameter between fruits of same variety on same tree, pollinated by different pollens, found within the first few weeks after pollination;

Pollination and pollen influence–*continued*

difference diminished in magnitude until fruits were mature and became negligible when fruits were ripe, due to dropping of smallest fruits during earlier stages of development, **1937,** II, 52. **The influence of different pollens on the growth and development of the fruit in apples and pears. I. A progress report on experiments carried out during 1937,** by H. M. Tydeman, **1937,** III, 117. Experiments showed that, although the varieties of apples and pears used would set fruits with pollen of several other varieties, fruit was set and matured more plentifully with certain sorts of pollen than with others, **1938,** II, 50. **The influence of different pollens on the growth and development of the fruit in apples and pears. II. Fruit size and seed content in relation to fruit drop,** by H. M. Tydeman: very close correlation between fruit size and seed content, and on the average dropped fruits contained fewer seeds, **1943,** III, 31. **A seasonal influence on cherry pollination and ripening,** by N. H. Grubb, **1948,** IV, 131. The influence of pollen parent, **1951,** II, 29. **The influence of the pollen parent on the development of apple fruits,** by H. M. Tydeman: significant differences in size between Cox derived from pollen of King of the Pippins and Worcester Pearmain during 1950 and 1951; the application of NAA considerably reduced these differences, **1951,** III, 62. **The effect of the time of pollination on fruit development and maturity in Cox's Orange Pippin apples,** by H. M. Tydeman: later pollinated flowers gave larger fruit than early pollinated, **1951,** III, 67. Confirmed that there is a small significant difference in fruit size and weight between Cox pollinated by the King of the Pippins and by Worcester Pearmain, **1952,** II, 25.

Polydrosus cervinus — *see under* Leaf weevils.

„ *sericeus* — *see under* Leaf weevils.

Polygonia c-album — *see under* Comma Butterfly.

Pomaceous seeds, germination — collaboration with Department of Agriculture and Forests, Pretoria, South Africa, **1938,** II, 49.

Pomology Section — general review of research work, **1922,** 20; **1923,** II, 80; **1924,** II, 37; **1925,** II, 37; **1926,** II, 35; **1927,** II, 37; **1928,** II, 35; **1929,** II, 33; **1930,** II, 39; **1931,** II, 21; **1932,** II, 23; **1933,** II, 27; **1934,** II, 33; **1935,** II, 27; **1936,** II, 29; **1937,** II, 38; **1938,** II, 37; **1939,** II, 20; **1940,** II, 15; **1941,** II, 14; **1942,** II, 14; **1943,** II, 15; **1944,** II, 17; **1945,** II, 17; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23; **1949,** II, 21; **1950,** II, 21; **1951,** II, 25; **1952,** II, 21; **1953,** II, 23.

Potash–

alcoholic — *see under* Ovicides.

general — *see under* Potassium.

Potassium — *see also under* Analysis, chemical, inorganic, potassium; Biennial bearing; Branch Blister; Chlorosis; 8-Hydroxyquinoline potassium sulphate; Manuring; Mineral composition; Mineral deficiencies; Plant injection; Potash.
leaves of Egremont Russet topworked on Bascombe's Mystery on M.V contained more potassium than immediately adjacent trees of Egremont Russet worked directly on M.V, **1943,** II, 23. Effect of spray of potassium sulphate on fruit drop in Cox, **1949,** II, 33; **1950,** II, 31. Potassium sulphate had no effect as a spray for leaf symptoms, **1952,** II, 30.

Potato(es)–

Aphid — observations on, **1939,** III, 72; **1942,** II, 25, III, 67. Vector of hop virus diseases, **1952,** III, 120.

Potato(es)–*continued*

Blight — *see also under* Potato trials.
notes on, **1924,** III, 110; **1925** (S), III, 77; **1926-27** (S), III, 76, 112. Comparison of phenyl mercury chloride and Bordeaux mixture, **1941,** II, 25; **1942,** II, 26. **Field trials of phenyl mercury chloride for the control of Potato Blight,** by H. B. S. Montgomery and H. Shaw: concentration of phenyl mercury chloride up to 0·0025% failed to give appreciable control of Potato Blight; in each year the attack of blight came late and Bordeaux spraying, though protecting the foliage against attack, did not give an increased yield, **1942,** III, 68.

carbon dioxide — effect of increased carbon dioxide in soil on growth of potatoes, **1952,** II, 33.

Dry Rot — observations on, **1940,** I, 13.

Experimental Farm — acreage, cropping, and general notes, **1914-15,** 9; **1915-16,** 6; **1917-18,** 6; **1940,** I, 13; **1941,** I, 12; **1942,** I, 13; **1943,** I, 13; **1944,** I, 14; **1945,** I, 14; **1946,** I, 13; **1947,** I, 17; **1948,** I, 19; **1949,** I, 18; **1950,** I, 19; **1951,** I, 20; **1952,** I, 18; **1953,** I, 19.

manganese deficiency — *see under* Manganese; Mineral deficiencies.

mineral deficiencies — *see under* Manganese; Mineral deficiencies.

Powdery Scab — notes on, **1926-27** (S), III, 118.

trials–

seed, spraying, and varieties — notes on, **1919-20,** 6; **1920-21,** 7; **1922,** 47; **1940,** I, 13. **Potato trials in 1924,** by R. G. Hatton and J. Amos, **1924,** III, 189.

Pot culture — trials with blood and magnesium sulphate, **1952,** I, 19.

Potentilla sp. — alternative host for strawberry viruses, **1951,** II, 41.

Powdery Mildew — *see under* name of host (for full list of names appearing in Index see pages 169-175).

Pratylenchus pratensis — *see under* Meadow Nematode.

,, spp. — *see under* Root Lesion nematodes.

Predatory insects and mites — *see under* Beneficial insects and mites, predators.

Pre-harvest drop — *see under* Fruit drop.

Prionus coriarius — *see under* Longhorned beetles.

Prionychus ater — *see under* Beetles, general.

Priophorus pallipes — *see under* Plum Leaf Sawfly.

Pristiphora pallipes — *see under* Small Gooseberry Sawfly.

Probit analysis — *see under* Statistical studies.

Propagation– — *see also under* Grafting *and* Rootstocks (with both of which the propagation of top fruits is intimately connected).

apples — *see also under* Propagation, cuttings, leaf-bud; Propagation, cuttings, stem, hardwood; Propagation, cuttings, stem, softwood; Propagation, rootstocks; Propagation, sphaeroblast shoots; Propagation, virus diseases; Rubbery Wood.
notes on, **1913-14,** 1; **1914-15,** 1; **1915-16,** 1; **1916-17,** 3; **1917-18,** 3; **1918-19,** 1; **1919-20,** 5; **1933,** II, 28; **1942,** II, 14; **1943,** II, 15; **1950,** II, 30; **1952,** II, 22; **1953,** II, 24.

blackberries — *see also under* Propagation, cuttings, leaf-bud; Propagation, layering.
notes on, **1937,** II, 101; **1938,** II, 99; **1940,** II, 17, IV, 91.

black currants — *see also under* Propagation, cuttings, stem, hardwood.
notes on, **1913-14,** 2; **1914-15,** 5; **1931,** II, 29; **1944,** II, 21; **1952,**

Propagation–black currants–*continued*

II, 30. Certification scheme, **1947,** IV, 178. Comparing stools and bushes as sources of cuttings, **1952,** II, 25.

budding — *see under* Grafting.

bud grafting — *see under* Grafting.

cherries — *see also under* Propagation, cuttings, stem, hardwood; Propagation, cuttings, stem, softwood; Propagation, rootstocks; Propagation, virus diseases.
notes on, **1918-19,** 12; **1922,** 27. Callus formation favoured by high soil moisture content, while soil aeration is an important factor in root formation, **1924,** II, 103. Cherry, rooted from hardwood cuttings, received from New Zealand for trial, **1952,** II, 22.

cuttings–

leaf-bud — notes on, **1951,** II, 26; **1952,** II, 22. Trials of loganberry, Parsley-leaved Berry, and Youngberry (both thorn and thornless forms), **1938,** II, 99. **'Leaf-bud' propagation of loganberry, Youngberry, and blackberries,** by R. J. Garner and D. H. Hammond, **1938,** IV, 218. Tip layering and leaf-bud cutting studies for blackberries, loganberries, and other hybrid berries, **1940,** II, 17. Propagation of apples, **1950,** II, 22; **1952,** II, 22, 30. Rooting of leaf-bud cuttings in nutrient solution, **1951,** II, 26; **1952,** II, 33. **Experiments with apple leaf-bud cuttings,** by R. J. Garner, E. S. J. Hatcher, and Catherine P. Nicoll: by growth substance stimulation leaf-bud cuttings of apple rootstock M.V have been induced to root, but leaf cutting failed to do so; reacting tissue was small piece of attached stem and not the axillary bud nor petiolar base; rooting behaviour of leaf-bud cuttings is influenced by position on shoot and time of separation from shoot, **1953,** III, 145.

root — notes on, **1926-27** (S), III, 22; **1947,** II, 22. Trial of pear root cuttings, **1933,** II, 43; Raising rootstocks, **1942,** IV, 88.

stem–

hardwood — *see also under* Propagation, hops; Propagation, rootstocks.
notes on, **1924,** II, 103; **1925,** II, 56; **1926,** II, 53; **1926-27** (S), III, 24; **1930,** II, 77; **1931,** II, 32; **1932,** II, 36; **1933,** II, 43; **1935,** II, 53; **1936,** II, 59; **1937,** II, 69; **1938,** II, 69, III, 165; **1940,** II, 21; **1941,** II, 20; **1942,** II, 14, 20; **1943,** II, 16; **1944,** II, 18, 23; **1946,** II, 18; **1947,** II, 22, 32; **1948,** II, 35; **1949,** II, 33; **1950,** II, 22; **1951,** II, 34; **1952,** II, 22, 25, 30; **1953,** II, 33. Improved rooting by placing layer of sphagnum moss below ground in which cuttings planted, **1930,** II, 77. Hardwood cuttings of Myrobolan B taken from an established hedge and planted in October, 1941, in two different situations showed 57% and 44% rooting respectively, but hardwood cuttings taken from side shoots of a layer bed and grown in ordinary soil only rooted 16%, **1942,** II, 14. Cuttings from the base of the shoot rooted better than those from the middle; cuttings planted immediately after treatment did better than those forced for some weeks in a hot house, **1942,** II, 20. **The propagation of fruit tree stocks by stem cuttings. III. Further observations on hardwood cuttings,** by M. C. Vyvyan: the greatest improvement in rooting and size was obtained by inserting a layer of humus (sphagnum moss or spent hops) under the sand of the cutting bed, **1942,** III, 40. Heat treatment of hardwood cuttings together with growth substance improved rooting; Brompton rootstocks can be fairly readily propagated by hardwood cuttings; spacing trials with hardwood cuttings of Myrobolan B indicated that spacing has considerable effect on size and shape of rooted cuttings, **1944,** II, 18. Trial of root promoting qualities of a phenylacetic acid complex,

Propagation–cuttings–stem–hardwood–*continued*

indoleacetic acid, and tryptophane gave no effect; phenylacetic acid complex inferior to indolebutyric acid, **1944,** II, 23. Best rooting responses being associated with cuttings taken from plants grown as a hedge or alternatively under conditions of semi-starvation, **1945,** II, 27. **The behaviour of hardwood cuttings of two plum rootstocks on four soils,** by R. J. Garner: importance of source (or internal condition) of cuttings, **1945,** III, 49. **Propagation of fruit tree rootstocks by stem cuttings. IV. Effects of soil conditions on habit of growth in Myrobolan B,** by M. C. Vyvyan and R. J. Garner, **1945,** III, 79. **Plant Myrobolan cuttings closer to improve their shape,** by R. J. Garner and E. S. J. Hatcher, **1945,** IV, 131. Nutritional status is a parental character associated with high rooting response; details of 'concentrated dip' method of treating cuttings with growth substances, **1946,** II, 29. **The selection of hardwood stem cuttings of an apple rootstock,** by R. J. Garner and E. S. J. Hatcher: root formations of apple stem cuttings selected from differing regions of parent plants of differing origin are related to the source of cuttings, **1947,** III, 71. **Growth substances in their relation to hardwood stem cuttings of fruit tree rootstocks,** by E. S. J. Hatcher and R. J. Garner, **1947,** III, 117. **A note on the hormone treatment of cuttings,** by E. S. J. Hatcher and R. J. Garner, **1947,** IV, 182. **Utilization of an ornamental lake for water-table control experiments in relation to vegetative propagation,** by R. J. Garner and E. S. J. Hatcher, **1948,** III, 77. **Aspects of root-stock propagation. I. The influence of date of planting on the establishment and growth of Myrobolan B plum hardwood cuttings,** E. S. J. Hatcher and R. J. Garner, **1948,** III, 92. **Some aspects of propagation research, with special reference to fruit trees,** by R. J. Garner, **1949,** IV, 166. 'Dip' method of applying growth substance superior to 'soak' method; optimal concentration and safe range varied with variety and time of taking cuttings, **1950,** II, 30. **Aspects of rootstock propagation. II. The development of the concentrated dip method of treating hardwood cuttings with growth substances,** by E. S. J. Hatcher and R. J. Garner: for Myrobolan B plum best concentration was 0·5 mg. per ml. of indolyl-butyric acid with damaging effects at 1 mg. per ml. Crab C apple full rooting response at 0·5 mg. per ml., though on the autumn cuttings 5 mg. per ml. did no damage, **1950,** III, 116. Studies made on (*a*) behaviour of cuttings from different natural sources, (*b*) the winter and summer storage of cuttings before planting, (*c*) the effect of height of water table, (*d*) influence of growth substances on rooting and establishment, **1951,** II, 34. Experiments on effects on rooting and growth of source of material, environmental factors, and storage of cuttings before planting; influence of time of taking cuttings on rooting under heavy and standard indole-butyric acid dip treatments, **1952,** II, 30.

softwood — *see also under* Propagation, hops.
notes on, **1925,** II, 56; **1926,** II, 53; **1926-27** (S), III, 27; **1927,** II, 49; **1938,** II, 69; **1939,** II, 25; **1943,** II, 16. Marked response to treatment with naphthaleneacetic acid and indole-butyric acid, **1937,** II, 68. **Experiments with growth controlling substances. II. Response of fruit tree cuttings to treatment with synthetic root-forming substances,** by H. L. Pearse, **1938,** III, 157. **A note on the hormone treatment of cuttings,** by E. S. J. Hatcher and R. J. Garner, **1947,** IV, 182. Softwood cuttings of raspberries, **1950,** II, 51.

dewberries — *see also under* Propagation, cuttings, leaf-bud.
notes on, **1935,** II, 79; **1936,** II, 85; **1937,** II, 101; **1938,** II, 99.

Propagation–*continued*

frameworking — *see under* Grafting.

general — notes on, **1922,** 36; **1935,** II, 30, 31; **1936,** II, 34; **1938,** II, 42; **1944,** II, 18; **1945,** II, 18, 27; **1949,** II, 22; **1950,** II, 22; **1951,** II, 26. **Some problems of propagation,** by R. G. Hatton, J. Amos, and A. W. Witt, **1923,** III, 100. **Some aspects of propagation research, with special reference to fruit trees,** by R. J. Garner, **1949,** IV, 166.

gooseberries — *see also under* Propagation, cuttings, stem, hardwood.
notes on, **1922,** 36; **1949,** II, 33; **1950,** II, 25. Testing source of cuttings and treatment with growth substances, **1952,** II, 25, 30.

grafting — *see under* Grafting.

hops — notes on, **1942,** II, 28; **1943,** II, 28; **1944,** II, 31; **1945,** II, 41; **1946,** II, 44; **1947,** II, 46; **1948,** II, 48. Comparing strap-cuts with cuttings made from natural runners showed latter gave as good a 'take', but that resulting sets were considerably smaller though quite satisfactory for planting out, **1943,** II, 28. **Propagation trials with hops. I. The effect of treating cuttings (strap-cuts) with a growth substance before planting,** by F. H. Beard: suggested that differential, varietal, and seasonal response to the treatment may be due to the physiological condition (forwardness) of the cutting at the time of its removal from the parent plant; NAA not recommended for treating hop cuttings as it may cause a definite reduction in number of plants produced, **1943,** III, 68. **Intensive methods for the propagation of hops; a plea for special hop nurseries,** by F. H. Beard, **1943,** IV, 112. **Propagation trials with hops. II. Preliminary trials in propagation by soft-wood cuttings,** by F. H. Beard and Dorothy J. Wilson: treatment with indolyl-butyric acid was very harmful; cuttings with some initial rooting gave best results, **1945,** III, 96. **Propagation trials with hops. III. A comparison of the performance of cuttings made from runners, layers and 'straps',** by F. H. Beard, **1945,** III, 104. Harmful effects of use of a synthetic growth substance noted on Fuggle in 1945, but has occurred with other varieties in 1946, **1946,** II, 44. **Propagation trials with hops. IV. Further trials in propagation by softwood cuttings,** by F. H. Beard and Dorothy J. Wilson: trials with basal shoot cuttings confirmed that cuttings made from shoots with some initial rooting gave best results, and that in all varieties treatment with synthetic growth substances may be very harmful, **1946,** III, 131. **Propagation trials with hops. V. Further experiments in treating cuttings (strap-cuts) with growth substances,** by F. H. Beard and Dorothy J. Wilson: apart from some checking effect on early shoot growth noted in main trial, various growth substance treatments had no effect, **1946,** III, 136. **Propagation trials with hops. VI. The effect of spacing cuttings (strap cuts) in the nursery rows on the number and size of sets produced,** by F. H. Beard: greatest number of useful sets per acre of nursery produced by close planting, **1946,** III, 140. **The propagation of hops by layering,** by W. G. Keyworth: details of three methods of hop propagation by layering, **1947,** IV, 189. **Propagation trials with hops. VII. Number and size of sets produced from strap-cuts of certain varieties,** by F. H. Beard, **1950,** III, 190.

hybrid berries — *see also under* Propagation, cuttings, leaf-bud.
notes on, **1937,** II, 101; **1938,** II, 99; **1940,** II, 17, IV, 89.

juvenile phase — *see under* Juvenile phase.

layering — *see also under* Nursery work; Propagation, hops *and* rootstocks.
notes on, **1933,** II, 43; **1934,** II, 54; **1935,** II, 53; **1940,** II, 17, 21. Treatment of plum layers with indole-butyric acid in solution or

Propagation–layering–*continued*

dust form applied at intervals during summer had no effect, **1944,** II, 18. **A note on the use of synthetic growth substances on plum rootstock layer beds,** by R. J. Garner and E. S. J. Hatcher, **1944,** III, 34.

loganberries — *see also under* Propagation, cuttings, leaf-bud; Propagation, layering.
notes on, **1935,** II, 79; **1938,** II, 99; **1940,** II, 17, 47, IV, 89. Method of propagating *Rubus* fruits from deblossomed plants by means of tips placed vertically in the soil has proved successful, **1937,** II, 101.

peaches — *see also under* Propagation, rootstocks; Propagation, virus diseases.
notes on, **1923,** II, 82.

pears — *see also under* Propagation, rootstocks; Propagation, virus diseases.
notes on, **1920-21,** 5; **1922,** 25; **1923,** II, 82. Trial of pear root cuttings, **1933,** II, 43. Budding on apple rootstocks, **1953,** II, 23.

plums — *see also under* Propagation, cuttings, stem, hardwood; Propagation, layering; Propagation, rootstocks; Propagation, virus diseases.
notes on, **1916-17,** 5; **1917-18,** 5; **1918-19,** 12; **1922,** 26; **1940,** II, 21; **1944,** II, 18; **1950,** II, 22. Growth of layer shoots, **1933,** II, 43. Importance of source of material demonstrated, **1942,** II, 14.

quinces (as pear rootstocks) — *see also under* Propagation, rootstocks; Propagation, virus diseases.
notes on, **1917-18,** 4; **1918-19,** 11; **1920-21,** 5; **1922,** 25; **1936,** II, 34; **1937,** II, 41; **1943,** II, 15.

raspberries — notes on, **1931,** II, 29; **1933,** II, 39; **1935,** II, 72; **1936,** II, 78; **1937,** II, 92; **1938,** II, 91; **1941,** II, 17; **1944,** II, 21; **1945,** II, 21; **1946,** II, 21; **1947,** II, 26; **1948,** II, 29. Nuclear Stocks and Certification Schemes, **1944,** II, 20; **1947,** II, 52, IV, 180; **1948,** II, 53; **1949,** II, 52; **1950,** II, 51; Softwood cuttings, **1950,** II, 51.

red currants — notes on, **1931,** II, 29.

rootstocks, general — *see also under* Propagation, cuttings; Propagation, layering; Propagation, general; Propagation, virus diseases; Rootstocks.
notes on, **1931,** II, 23; **1932,** II, 24; **1933,** II, 28; **1934,** II, 36; **1935,** II, 30; **1936,** II, 34; **1937,** II, 41; **1942,** II, 14; **1943,** II, 15; **1945,** II, 18; **1946,** II, 17; **1947,** II, 22; **1949,** II, 22; **1950,** II, 22; **1951,** II, 26; **1952,** II, 22. **The vegetative propagation of fruit-tree rootstocks,** by R. C. Knight, J. Amos, R. G. Hatton, and A. W. Witt, **1926-27** (S), III, 11. **Raising rootstocks,** by R. J. Garner: the practical vegetative propagation of fruit-tree rootstocks by stooling, layering, and hardwood and root cuttings is described, **1942,** IV, 84. Certification Scheme, **1947,** IV, 181. **Rootstock propagation and fruit tree raising,** by R. J. Garner, **1948,** IV, 132.

sphaeroblast shoots — notes on, **1953,** II, 24.

stooling — *see under* Propagation, layering.

strawberries — notes on, **1931,** II, 29; **1932,** II, 33; **1933,** II, 39; **1934,** II, 43; **1935,** II, 74; **1936,** II, 80; **1937,** II, 95; **1938,** II, 93; **1943,** II, 17; **1944,** II, 20; **1945,** II, 21; **1946,** II, 21; **1947,** II, 26; **1948,** II, 29; **1949,** II, 27; **1950,** II, 25; **1951,** II, 30. Vigour of runner more important than selection from fruiting parents, **1930,** II, 45. Results emanating from records of vigour, cropping, and health of about 2,500 individual Royal Sovereign plants, **1937,** II, 96. **The production of healthy strawberry runners** (Methods recommended for Special Stock nurseries), by W. S. Rogers and Joan M. Buttfield, **1943,** IV, 87. Nuclear Stocks and Certification Schemes, **1943,** IV, 87; **1944,** II, 20, IV, 113; **1947,** IV, 179. **Strawberry runner supplies and certificates,** by W. S. Rogers, **1944,** IV, 113.

Propagation–strawberries–*continued*

Developments in the isolated block system for raising strawberry runners, by W. S. Rogers: the closer the spacing of the parent plants the greater the runner yield per acre, but the smaller the yield per parent, **1946,** III, 66.

virus diseases — *see also under* individual fruits.
importance of virus-free material, **1950,** IV, 210. **Virus diseases and the propagation of fruit trees,** by A. F. Posnette: careful selection of rootstocks and scion material needed to reduce incidence of virus diseases, **1952,** IV, 179.

walnuts — *see also under* Walnuts, general.
notes on, **1926,** II, 38; **1930,** II, 44; **1931,** II, 27; **1932,** II, 30; **1933,** II, 37; **1935,** II, 39; **1936,** II, 43; **1937,** II, 53; **1938,** II, 51. **The vegetative propagation of walnuts,** by A. W. Witt, **1926-27** (S), III, 60. **The future of walnut propagation in England,** by Joyce B. Hamond, **1934,** IV, 239. **A survey of the investigations on the propagation and testing of walnuts at the East Malling Research Station,** by A. W. Witt, **1937,** IV, 259. That only good mature buds of previous season's growth are successful for budding in open ground has been confirmed, **1938,** II, 51.

Propylene oxide — use in sterilization of blackberries, **1952,** III, 136.

Prune — red spider mite on, **1943,** III, 64.

Prune Dwarf, plums — notes on, **1952,** IV, 183.

Pruning– — *see also under* Defeathering; Intensive fruit culture (for pruning of cordons, dwarf pyramids, espaliers, etc.).

apples — notes on, **1920-21,** 6; **1928,** II, 36; **1929,** II, 35; **1930,** II, 42; **1931,** II, 24; **1932,** II, 27; **1934,** II, 38; **1935,** II, 34; **1936,** II, 39; **1937,** II, 46; **1939,** II, 20; **1946,** II, 19; **1947,** II, 23; **1953,** II, 26. Pruned trees much freer from Apple Scab on both leaf and fruit than unpruned trees, **1918-19,** 13. Effects of different winter pruning treatments, **1922,** 29. Pruning experiments, **1924,** II, 39. **Apple pruning: summary of deductions,** by N. H. Grubb, **1925,** IV, 41. Effects of various times, degrees, and methods of branch pruning upon root development; defeathering of stems in summer had markedly adverse effect on weight, girth, and root development, and no compensating increase in the growth of leading branches in the head, **1927,** II, 38. **Apple pruning: summary of deductions from experiments at East Malling** (revised January, 1929), by N. H. Grubb, **1928,** IV, 62. Pruning results in reduction of total stem growth and of total root growth in the following season, but distribution of stem growth is different in pruned and unpruned trees; relation between amount of total new stem growth and total new root growth unaffected by pruning, **1928,** II, 88. **The pruning and renovation of apple trees,** by N. H. Grubb, **1931,** IV, 61. The proportion of new stem growth to new root growth unaltered by pruning, **1933,** II, 44. Notes on apple pruning; only long continued prevention of cropping can now bring the regulated trees of Cox (whose leaders have never been tipped) up to the performance of the regularly leader tipped trees, **1936,** II, 38. Severe pruning delays fruiting, **1936,** II, 42. **Winter pruning of apple trees: some advice based on the East Malling experiments,** by N. H. Grubb, **1937,** IV, 237. Notes on pruning designed to combat biennial bearing; while in other years severe spur thinning resulted in a greater percentage blossom set, in 1941 the reverse occurred, suggesting that the spur thinning induced greater susceptibility to frost damage, **1941,** II, 15. Wide spacing of spurs of Early Victoria apple trees gave definite increase in fruit size, with some

Pruning–apples–*continued*

reduction in crops, **1942,** II, 15. Longitudinal slitting of bark on branches of Worcester Pearmain in weak state of growth did not stimulate new shoot production in the first season, **1944,** II, 19. Small trial comparing renewal pruning system with established-spur system on mature trees of Cox, **1945,** II, 19. **Renewal and established-spur pruning of mature apple trees: a progress report,** by W. S. Rogers and A. P. Preston: renewal-pruned trees suffer more severely than spur-pruned from petroleum spray damage; blossom on one-, two-, and to a lesser extent on three-year-old wood tends to open later than that on spurs; in second year of trial renewal-pruned trees had 66% more fruit, and fruit was of better colour, **1946,** III, 49. Trial of renewal and established-spur pruning methods applied to 34-year-old Cox, **1947,** II, 23. Trial of renewal versus established-spur pruning methods; two methods of group disbudding, as practised in U.S.A., included in a field trial, **1948,** II, 26. **The production of a primary branch framework on apple trees,** by A. P. Preston, **1948,** III, 55. Comparing 'pillar' pruning with established-spur pruning; effect on blossoming of maintaining a proportion of established spurs on a renewal-pruned tree, **1949,** II, 24. Physiological basis of tree response to stem pruning, **1949,** II, 33. **Observations on the pruning of bush apples by renewal and spur methods,** by A. P. Preston, **1949,** IV, 151. Nature of the mechanism involved in response to stem pruning, **1950,** II, 30. Tree shape and method of pruning in relation to biennial bearing of apples, **1951,** II, 28. **Pruning maiden apple trees as bushes,** by A. P. Preston: as open-centre or delayed open-centre bushes, **1951,** IV, 199. Effect of light and severe pruning on 4-year-old Cox and Worcester Pearmain, **1952,** II, 29. **Apple pruning trials: a progress report,** by A. P. Preston: treatments include open-centre and delayed open-centre shapes, and established-spur, renewal, and regulated methods of pruning; effect of these on vigour, fruit bud formation, premature fruit drop, fruit yield, and fruit size are discussed, **1953,** III, 105. **Pruning young apple trees by the regulated method,** by A. P. Preston, **1953,** IV, 200.

black currants — notes on, **1947,** II, 27; **1948,** II, 30; **1949,** II, 29. Lighter pruned bushes have consistently cropped the heaviest, **1919-20,** 6; **1922,** 34. No appreciable difference between pruning immediately after fruiting compared with normal winter pruning, **1949,** II, 29. Trial comparing post-cropping pruning with normal winter pruning, earlier pruned bushes bore higher crop, **1951,** II, 30.

cherries — notes on, **1932,** II, 24, 27; **1933,** II, 31; **1934,** II, 38; **1935,** II, 34; **1936,** II, 39; **1937,** II, 46; **1938,** II, 46; **1947,** II, 23. **The influence of branch pruning of cherries on the growth of suckers,** by N. H. Grubb and R. C. Knight: very severe branch pruning (dehorning) of Morello cherries was followed by an increase in sucker growth of approximately 100%, **1933,** III, 92. Four pruning treatments applied to mature trees of Morello cherries with object of maintaining a regular supply of young bearing wood, **1948,** II, 26; **1949,** II, 24.

general — tree morphology in relation to, **1938,** II, 68. Use of willow cuttings in experiment on mechanism of response to stem pruning, **1950,** II, 30; **1951,** II, 34.

gooseberries — notes on, **1914-15,** 6.

peaches — notes on, **1950,** II, 23; **1951,** II, 28; **1952,** II, 23.

pears — notes on experiments, **1925,** II, 39; **1926,** II, 37; **1927,** II, 39; **1928,** II, 37; **1929,** II, 35; **1930,** II, 42; **1932,** II, 27; **1933,** II, 31; **1934,** II, 38; **1935,** II, 34; **1936,** II, 39; **1937,** II, 46; **1946,** II, 16. **A progress**

Pruning–pears–*continued*

report on winter pruning experiments with pear trees, by J. Amos, **1926-27** (S), III, 65. Greatest total weight of fruit in certain varieties obtained where the trees have not been leader tipped and have only had light thinning of the branches, but in two other varieties has resulted in badly shaped trees and those which have been regularly leader tipped and the laterals spurred have given largest amount of fruit, **1938,** II, 46. Records of leaf size indicate that while dehorning might increase leaf size on the cut branches themselves, leaf size on lateral branches was not increased, **1941,** II, 15. **A winter pruning trial of pears,** by T. N. Hoblyn (report on an experiment carried out by the late Mr. J. Amos): the lighter the trees were pruned, especially in treatment of the leaders, the more blossom they produced and the greater the yield of fruit, **1945,** III, 54.

plums — notes on, **1927,** II, 39; **1932,** II, 24; **1935,** II, 34; **1936,** II, 39; **1937,** II, 46; **1938,** II, 46; **1939,** IV, 82, 83; **1943,** II, 17. To be avoided in autumn because of Bacterial Canker, **1933,** III, 147. In a four-year-old plum pruning trial differences in tree shapes and branch angles are now showing, the unpruned trees having very few narrow crotch angles, **1952,** II, 23.

Prunus amygdalus — *see under* Almond.

,, aphids, general — observations on, **1952,** II, 40.

,, *avium* — is the sweet cherry.

,, *cerasus* — is the acid cherry.

,, *divaricata* — *see also under* Rootstocks, plum.
trial of 160 seedlings worked with Czar plums, **1936,** II, 42.

,, *pissardii* — *see under* Bacterial Canker, plums.

,, shoots, wilting of — *see under* Layer beds, *Prunus* spp., wilting in.

,, spp. and *Malus* spp. — virus transmissions between, **1952,** II, 131.

,, *tomentosa* — presence of Brown Rot, **1939,** III, 60.

Psallus ambiguus — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Pseudomonas juglandis — *see under* Walnut Bacterial Blight.

,, *mori* — *see under* Mulberry Bacterial Blight.

,, *mors-prunorum* — *see under* Bacterial Blossom Blight, cherries, Morello; Bacterial Canker; Hydrogen-ion concentration.

,, *prunicola* — *see under* Bacterial Blossom Blight, pears; Bacterial Canker; Lilac Bacterial Blight.

,, sp. — *see under* Forsythia Bacterial Blight.

,, *syringae* — *see under* Bacterial Blossom Blight, pears; Bacterial Canker; Lilac Bacterial Blight.

Pseudoperonospora humuli — *see under* Hop Downy Mildew.

Pseudopeziza ribis — *see under* Leaf Spot, currants; Leaf Spot, gooseberries.

Psychid Moth — observations on, **1939,** III, 71.

Psylla mali — *see under* Apple Sucker.

,, *pyri* — *see under* Pear Sucker.

,, *pyricola* — *see under* Pear Sucker.

,, *simulans* — *see under* Pear Sucker.

Psyllia — *see under Psylla.*

Psylliodes attenuata — *see under* Hop Flea Beetle.

Pterochlorus saligna — *see under* Large Willow Aphid.

Pteronidea ribesii — *see under* Common Gooseberry Sawfly.

Puccinia antirrhini — *see under* Antirrhinum Rust.

,, *lychnidearum* — *see under* Sweet William Rust.

,, *menthae* — *see under* Mint Rust.

,, *phragmitis* — *see under* Rhubarb Rust.

,, *pringsheimiana* — *see under* Cluster Cup Rust, gooseberries.

,, *pruni-spinosae* — *see under* Rust, plums.

Pug Moth — larvae gnaw through growing tips of hop shoots, **1948,** III, 103.

Purple Blotch, blackberries — notes on, **1931,** II, 38; **1932,** II, 41.

Puss Moth — observations on, **1937,** III, 207.

Pygmy Mangold Beetle — *see under* Beneficial insects and mites, general *and* pollinators.

Pyrethrum–

- flowers — notes on, **1929,** II, 37. Trials on, **1930,** II, 44.
- spray — *see under* Apple Blossom Weevil; Apple Capsid Bug; Apple Sawfly; Common Gooseberry Sawfly; Common Green Capsid; Insect populations; Pear Slug Sawfly; Raspberry Beetle; Red Spider Mite.

Pyronia veitchii luxemburgiana — a pear-quince hybrid, **1949,** II, 26. Back-crossed with pear, **1953,** II, 26.

Pyrus japonica — *see under* Brown Rot, general.

,, *purpureum* — *see under* Brown Rot, general.

Quinalizarin — method of colorimetric estimation of boron, **1943,** II, 22.

Quince(s)–

- aphids — *see under* Black Bean Aphid; Green Apple Aphid; Oat-Apple Aphid; Potato Aphid.
- breeding — *see under* Breeding, top fruits, quinces; Breeding, top fruits, rootstocks, pear.
- Brown Rot — *see under* Brown Rot, quinces.
- diseases, general — notes on, **1924,** III, 116; **1925** (S), III, 80.
- frost damage — *see under* Frost damage investigations, quinces.
- Japanese — heavy infection of Oat-Apple Aphid on, **1946,** III, 128. Decorative variety of quince, **1950,** III, 143.
- Leaf Blight — *see under* Leaf Blight, quinces.
- ,, Blotch — *see under* Leaf Blotch, quinces.
- ,, Scald — *see under* Leaf Blight, quinces.
- ,, Spot — *see under* Leaf Blight, quinces.
- Mildew — caused by *Podosphaera leucotricha*; notes on, **1926-27** (S), III, 82.
- propagation — *see under* Propagation, quinces.
- rootstocks — *see under* Rootstocks, pear; Rootstocks, quince.
- varieties–
  - collections, trials, and classification — *see also under* Quince, Japanese; Rootstocks, quince. notes on, **1946,** II, 20. Preliminary survey of Angers, Fontenay, and Provence quinces from continental nurseries as well as reputedly cold-resistant varieties from Pillnitz, **1949,** II, 26.
- Verticillium Wilt — *see under* Verticillium Wilt, quinces.
- virus diseases — *see under* Pears, virus diseases.

Quinic acid — notes on, **1952,** II, 31, 32.

Rabbit repellents — **A progress report on experiments with rabbit repellents,** by E. G. Coker: only repellent showing promise was compound 96A of the United States Fish and Wild Life Service, **1950,** III, 87.

Rain — *see under* Fruit drop (**1950,** III, 108); Weather conditions.

Ramage flame method of spectrography — *see under* Analysis, spectrographic, flame method.

Ramularia armoraciae — *see under* Leaf Spot, horse-radish.

,, *beticola* — *see under* Leaf Spot, beetroot.

Raspberry (ies)–

Aphid — vector of raspberry virus diseases, **1945,** II, 37; **1947,** II, 50; **1950,** II, 50, III, 127.

aphids — *see under Aphis rubiphila*; Raspberry Aphid; Rubus Aphid.

Beetle — observations on, **1930,** II, 103; **1931,** II, 43; **1932,** II, 46; **1933,** II, 54; **1935,** IV, 237; **1938,** IV, 256; **1946,** II, 42. Lead arsenate spray too poisonous, **1929,** II, 81. **The Loganberry Beetle,** by W. Steer: life history and damage caused by beetle, with notes on spraying, **1928-29-30 (S),** III, 210. **The control of the Raspberry and Loganberry Beetle by means of derris,** by W. Steer, **1931,** IV, 81. **Studies on *Byturus tomentosus* Fabr. IV. 1933 experiments on the control of the Raspberry and Loganberry Beetle,** by W. Steer: satisfactory results with one spraying of derris, given normally at end of June when larvae begin to attack berries, **1933,** III, 188. Derris dusts are somewhat less efficient than derris and soap as a means of control, **1934,** II, 70. **Studies on *Byturus tomentosus* Fabr. V. 1934 experiments on the control of the Raspberry and Loganberry Beetle,** by W. Steer: on loganberries derris gave as good results when incorporated in a spray of lime-sulphur and sulphite lye, or of 'colloidal copper' and sulphite lye, as when used with soft soap; a single application of derris and soap satisfactorily controlled pest on cultivated blackberries, **1934,** III, 191. Acts as a beneficial beetle on apple, **1936,** III, 223. Beetles readily affected by atomized pyrethrum spray, but invariably recovered, **1939,** II, 32. Insecticidal trials, **1944,** II, 30. As Guesarol E, DDT at 0·0125% was as effective as a derris wash containing 0·004% rotenone and only a little, though significantly, less effective than DDT at higher concentrations, **1945,** II, 39. Insecticidal trials with DDT emulsion, suspension, and wettable powder; no difference between treatments, **1947,** II, 44.

black — *Rubus occidentalis*; principal test plant for raspberry viruses; viruses do not appear to persist in body of aphid (*Amphorophora rubi*) for more than 24 hours, **1950,** II, 50.

Black Blotch — *see under* Black Blotch, raspberries.

Black Root Rot — *see under* Black Root Rot, raspberries.

blossoming, delaying — *see under* Blossoming, delaying.

Blue Stripe Wilt — *see under* Blue Stripe Wilt.

Botrytis Rot — *see under* Grey Mould.

breeding — *see under* Breeding, soft fruits, raspberries.

Bushy Dwarf — *see under* Curly Dwarf, raspberries.

Cane Blight — *see under* Cane Blight, raspberries.

,, Midge — *see also under* Cane Blight, raspberries.
notes on, **1929,** II, 68; **1939,** III, 72; **1946,** II, 35; **1947,** II, 25, 41; **1948,** II, 43. Close correlation between midge and certain parasitic

	fungi which attack stem of the plant, **1945,** II, 37. Absent so far from Scotland, **1947,** II, 51. **Observations on the Raspberry Cane Midge (*Thomasiniana theobaldi* Barnes) and its association with Cane Blight,** by R. S. Pitcher: preliminary account of way in which young canes damaged by feeding of Raspberry Cane Midge larvae become susceptible to fungal invasion, **1947,** III, 141. BHC and parathion compared, **1949,** II, 44. **The Raspberry Cane Midge and its control,** by R. S. Pitcher: attacks Newburgh and Malling Enterprise, while Norfolk Giant and Malling Landmark are very resistant; two sprays of BHC wettable powder at 0·1% crude BHC (0·013% isomer) as control, **1950,** IV, 211. **The host plant range and economic importance of a group of gall midges (*Thomasiniana* spp.) associated with fruit,** by R. S. Pitcher, **1953,** III, 168.
cane nurseries	**The planting and maintenance of raspberry cane nurseries,** by N. H. Grubb and R. V. Harris, **1944,** IV, 109. **Raspberry cane nurseries,** by C. A. Wood, **1948,** IV, 141.
Cane Spot	*see under* Cane Spot, raspberries.
canning	*see under* Canning, raspberries.
capsid damage	*see under* Common Green Capsid.
certification schemes	*see under* Propagation, raspberries.
copper injection	notes on, **1952,** II, 32.
cropping	*see under* Raspberries, Experimental Farm; Raspberries, running-out; Raspberries, varieties.
Crown Gall	*see under* Crown Gall, general.
cultural measures, general	notes on, **1950,** II, 26; **1951,** II, 30; **1952,** II, 26; **1953,** II, 27.
dieback	*see also under* Functional disorders, Dwarf Lateral Scorch, Rubi. particularly noted in Lloyd George variety, due possibly to a *Fusarium* sp., **1930,** II, 88. Prevalent in 1936; striking correlation of dieback group of symptoms with defective soil drainage, **1936,** III, 187. Results of detailed experiment, **1937,** II, 93. A functional disorder, **1939,** II, 29.
diseases	*see also under* common names of diseases (for full list of names appearing in Index see pages 169-175); Raspberries, growing, general; Raspberries, running-out; Raspberries, varieties. notes on, **1924,** II, 108; **1926,** II, 58; **1933,** III, 145. **The pathology of the raspberry: a summary of results of recent research at East Malling,** by R. V. Harris: deals with Blue Stripe Wilt, Cane Spot, Mosaic, and Spur Blight, **1926-27 (S),** III, 128. Various fungi associated with diseased canes, **1929,** II, 69. **Notes on diseases of the raspberry, loganberry, and blackberry in 1928-30,** by R. V. Harris: discusses Blue Stripe Wilt, Cane Spot on raspberries and loganberries, Spur Blight and Cane Blight of raspberries, Black Blotch of raspberries, Botrytis Rot, frost injury, Black Root Rot, *Septoria* spp. affecting blackberry, Blackberry Rust, **1928-29-30 (S),** III, 133. **Some observations on the raspberry disease situation in North America,** by R. V. Harris, **1934,** III, 156. **Growing healthy raspberries: the control of diseases and pests,** by R. V. Harris, **1935,** IV, 232.
Dwarf disease	*see under* Rubus Stunt.
Dwarf Lateral Scorch	*see under* Functional disorders, Dwarf Lateral Scorch, Rubi.
Experimental Farm	acreage, cropping, and general notes, **1929,** I, 25; **1930,** I, 32; **1931,** I, 13; **1932,** I, 14; **1933,** I, 16; **1934,** I, 21; **1935,** I, 18; **1936,** I, 16; **1937,** I, 19; **1938,** I, 23; **1939,** I, 15, 16; **1940,** I, 12; **1941,** I, 11;

Raspberry (ies)–Experimental Farm–*continued*

1942, I, 11; **1944,** I, 13; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 18; **1949,** I, 17; **1950,** I, 16; **1951,** I, 18; **1952,** I, 15, 16; **1953,** I, 18.

Flea beetles — observations on *Batophila aerata* and *B. rubi*, **1938,** III, 180.

frost damage — *see under* Frost damage investigations, raspberries.

Fruit Tree Red Spider Mite — damage by, **1934,** III, 167.

Gall Mite — *see under* Raspberry Leaf and Bud Mite.

growing, general — *see also under* Raspberries, varieties.
notes on, **1918-19,** 14; **1920-21,** 7; **1922,** 35. **Growing healthy raspberries: the control of diseases and pests,** by R. V. Harris, **1935,** IV, 232. **Some impressions of New Zealand raspberry growing,** by C. H. Cadman, **1947,** IV, 173. **Can the health of raspberry stocks be improved?,** by R. V. Harris and C. H. Cadman, **1948,** IV, 138.

growth substances — β-indolyl-butyric and α-naphthaleneacetic acids had injurious effect on root growth, **1947,** II, 52.

Investigation, A.R.C., Scottish — general review of research work, **1946,** II, 47; **1947,** II, 50; **1948,** II, 52; **1949,** II, 51; **1950,** II, 50; **1951,** II, 51.

irrigation — *see under* Irrigation, raspberries.

leaf, use in spray damage investigations — *see under* Spray damage.

Leaf and Bud Mite — observations on, **1926-27** (S), III, 162. **The Gall Mites of the Himalaya Berry and raspberry,** by A. M. Massee, **1925** (S), III, 154.

,, Curl — *see under* Leaf Curl, raspberries.

,, -mining Sawfly — observations on, **1938,** III, 184.

,, scorch — *see under* Leaf scorch, raspberries.

,, Spot — *see under* Cane Spot, raspberries.

lightning damage — **Lightning damage to raspberries,** by N. H. Grubb, **1948,** III, 81.

maleic hydrazide — *see under* Blossoming, delaying.

Malling Promise — *see under* Raspberries, varieties.

manuring — *see under* Manuring, raspberries.

Midge Blight — *see also under* Cane Blight.
death of canes due to attack of Raspberry Cane Midge; two sprays of BHC wettable powder recommended as control, **1950,** IV, 211.

Mildew — notes on, **1924,** III, 116; **1933,** III, 145.

Mite — *see under* Raspberry Leaf and Bud Mite.

Mosaic — notes on, **1924,** II, 109, III, 116; **1925** (S), III, 81; **1926,** II, 58; **1926-27** (S), III, 128; **1928,** II, 98; **1929,** II, 69; **1930,** II, 88, IV, 95; **1931,** II, 37, III, 49; **1932,** II, 40, III, 83; **1933,** II, 48, III, 145; **1934,** II, 62; **1935,** IV, 237; **1938,** III, 171; **1940,** II, 24; **1941,** II, 22, 23. **Raspberry 'Mosaic',** by N. H. Grubb and A. M. Massee, **1923,** III, 131. **Three raspberry diseases,** by R. V. Harris: includes account of Raspberry Mosaic, **1925,** IV, 64. Confirmed that, in case of variety Baumforth's Seedling B, disease can be transmitted by grafting to healthy stocks, **1927,** II, 54. **The commercial control of raspberry-mosaic disease,** by R. V. Harris and N. H. Grubb, **1932,** IV, 149. Red Cross highly resistant to, **1935,** II, 73. Suggestion that an incompatibility factor prevents adequate success of method of grafting used, **1936,** II, 79. Field transmission of, **1938,** II, 92. Symptoms of Raspberry Mosaic referred to two distinct categories: Mosaic 1, a single mild disease with comparatively restricted distribution, and Mosaic 2 which includes diseases differing in intensity from mild to extremely severe and is widely

Raspberry (ies)–Mosaic–*continued*

distributed; Lloyd George and some other varieties react as symptomless carriers of Mosaic 2; severe form of Mosaic on Lloyd George is a combination of Mosaic 1 and Mosaic 2, **1939,** II, 29. *Amphorophora rubi* and *Aphis idaei* tested as possible vectors for Mosaic 1 and 2, using Lloyd George and Norfolk Giant as sources of infection and healthy canes of the latter variety as indicators—no symptoms developed yet, **1945,** II, 37. Decline of Lloyd George caused by combination of severe Mosaic 2 disease and a second virus, provisionally named Bushy Dwarf, **1951,** II, 51.

Moth — observations on, **1933,** II, 54; **1935,** IV, 236; **1939,** III, 71; **1942,** III, 64; **1946,** III, 127. Complete control obtained at sacrifice of year's crop by cutting down the fruiting cane in the spring, **1934,** II, 70. Difficulty of locating hibernating larvae in soil during winter, and extended period of larval emergence during spring, **1947,** II, 51. Studies in life history and spraying trials; tar oil gives more efficient control than DDT, **1948,** II, 53.

Norfolk Giant — *see under* Raspberries, varieties.

Nuclear Stock Propagation Scheme — *see under* Propagation, raspberries.

plant injection — increased growth in each leaf on side permeated by copper, **1952,** II, 32.

propagation — *see under* Propagation, raspberries.

purple-cane hybrids — notes on, **1949,** II, 28; **1951,** III, 91.

red — high resistance to aphid-borne virus infection, **1950,** II, 50.

red, American — *Amphorophora rubi* failed to thrive on plants of, **1949,** II, 51.

Red Cross — highly resistant to ordinary mosaic, **1935,** II, 73.

running-out — **The causes of 'running-out' and non-cropping of the raspberry,** by R. V. Harris: popular descriptions of Cane Spot, Cane Blight, Spur Blight, Botrytis Rot, Blue Stripe Wilt, and Raspberry Mosaic, **1930,** IV, 95.

Rust — notes on, **1924,** III, 116; **1925** (S), III, 82.

Shoot Moth — *see under* Raspberry Moth.

slug damage — *see under* Slugs.

softwood cuttings — *see under* Propagation, cuttings, stem, softwood.

Spur Blight — *see under* Spur Blight, raspberries.

straw mulch — *see under* Manuring, raspberries; Mulching, straw.

varieties–

collections, trials, and classification — notes on, **1916-17,** 11; **1918-19,** 14; **1919-20,** 6; **1920-21,** 7; **1922,** 35; **1924,** II, 40; **1929,** II, 37; **1930,** II, 44; **1935,** II, 72; **1936,** II, 78; **1937,** II, 92; **1938,** II, 91; **1941,** II, 16; **1942,** II, 16; **1943,** II, 17; **1944,** II, 20; **1945,** II, 20; **1946,** II, 21; **1947,** II, 25, 52; **1948,** II, 28, 53; **1949,** II, 27, 52; **1950,** II, 25, 51; **1951,** II, 29, 51; **1952,** II, 25; **1953,** II, 27. **Raspberry investigations,** by N. H. Grubb, **1923,** III, 128. **Raspberry varieties and their cropping,** by N. H. Grubb, **1924,** III, 75. **The heaviest cropping raspberry varieties at East Malling,** by N. H. Grubb: describes Baumforth A, Halston, Lloyd George, Red Antwerp C, North Ward, Red Cross, and Pyne's Royal, **1930,** IV, 52. **The cropping of raspberry varieties at East Malling,** by N. H. Grubb: full account of the varieties and their diseases; yield of 15 varieties for period 1927-30 given, **1928-29-30** (S), III, 32. **Raspberry planting: some notes on varieties,** by N. H. Grubb, **1941,** IV, 52. **Five new raspberry seedlings,** by N. H. Grubb, **1942,** III, 31. **Norfolk Giant: a reliable raspberry for**

Raspberry (ies)–varieties–collections, trials, and classification–*continued*

the present day, by R. V. Harris, **1943,** IV, 108. **Malling Promise raspberry,** by N. H. Grubb, **1945,** IV, 133. **East Malling raspberries,** by A. C. Painter: short notes on new varieties based largely on behaviour at East Malling, **1947,** IV, 171. Purple-cane hybrids, **1949,** II, 28; **1951,** III, 91. **Raspberries in Scotland,** by C. H. Cadman and C. A. Wood, **1950,** IV, 203. **Raspberry varieties in Great Britain,** by C. A. Wood: touches on characters desirable in raspberries (including suitability for fresh fruit market, canning, quick freezing, and jam), characters used for identification, descriptions of modern commercial varieties, and notes on varieties of minor commercial importance and hybrid berries, **1951,** III, 82. **Recent progress in raspberry breeding,** by N. H. Grubb and C. A. Wood: includes results of cropping trials of a number of varieties and seedlings, together with some details of origins and characteristics, **1953,** III, 95.

Vein-chlorosis — *see under* Vein-chlorosis, raspberries.

virus diseases–general — *see also under* Curly Dwarf, raspberries; Grafting (as regards cane inarching for diagnosing virus diseases); Leaf Curl, raspberries; Raspberry Mosaic; Rubi, virus diseases; Rubus Stunt; Vein-chlorosis, raspberries; Yellows, raspberries.
notes on, **1943,** II, 24; **1944,** II, 26. Results, indicating that Baumforth's Seedling B carried an hitherto unsuspected virus, investigated by grafting, **1942,** II, 22. Norfolk Giant as indicator to supplement results from Baumforth's Seedling B in grafting tests, **1945,** II, 33. **A review of some recent research on virus diseases of raspberry and strawberry in Great Britain,** by R. V. Harris, **1946,** III, 113. High resistance of red raspberries to aphid-borne infection, **1949,** II, 51; **1950,** II, 50. Black raspberry as test plant, **1950,** II, 50. **Raspberry virus diseases: a survey of recent work,** by C. H. Cadman and R. V. Harris, **1950,** III, 127.

vectors — *see under Aphis rubiphila*; Raspberry Aphid; Rubus Aphid; Rubi, virus diseases.

weedkillers — *see under* Weedkillers, raspberries.

Yellows — *see under* Yellows, raspberries.

Rasp Leaf, cherries — *see under* Cherry Rasp Leaf.

Recording apparatus — **Recording apparatus for horticultural experiments, including automatic counting devices,** by W. S. Rogers: gives description of field telephone recording apparatus, counters, recording secateurs, counting picking bag, and apple grade counter, **1928-29-30 (S),** III, 65.

,, technique — *see under* Statistical studies.

Records Section — *see under* Statistics and Records Section.

Red Berry Disease, blackberries — *see under* Blackberries, Red Berry Disease.

,, and Black Froghopper — observations on, **1940,** III, 64; **1942,** III, 66; **1952,** III, 148.

,, Bud Borer — observations on, **1935,** III, 167; **1937,** II, 42; **1948,** II, 43; **1949,** II, 43; **1950,** II, 43; **1951,** II, 44; **1952,** II, 40. Preliminary trial of effect of sealing newly inserted apple buds with petroleum jelly on the prevention of bud losses due chiefly to depredation of Red Bud Borer, **1936,** II, 34. **Studies in nursery technique: shield-budding—treatment of inserted buds with petroleum jelly,** by R. J. Garner and D. H. Hammond: prevention of damage by Red Bud Borer, **1938,** III, 115. Observations on relation to Raspberry Cane Midge, **1947,** II, 41. **The host plant range and economic importance of a group**

Red Bud Borer–*continued*

	of gall midges (*Thomasiniana* spp.) associated with fruit, by R. S. Pitcher: includes Red Bud Borer, **1953,** III, 168.
,, ,, Maggot	*see under* Raspberry Moth.
,, Core Disease, strawberries	notes on, **1947,** III, 144.
Red currant(s)–	
aphids	*see also under* Red Currant Blister Aphid.
	biology of, **1952,** II, 40.
Armillaria Root Rot	attack by, **1947,** II, 26.
Blister Aphid	*see under* Black Currant Reversion.
breeding	*see under* Breeding, soft fruits, red currants.
Collar Rot	*see under* Fomes Collar Rot.
Coral Spot	*see under* Coral Spot.
cropping	*see under* Red currants, Experimental Farm.
diseases	*see also under* common names of diseases (for full list of names appearing in Index see pages 169-175). notes on, **1924,** III, 116.
Experimental Farm	acreage, cropping, and general notes, **1926,** I, 29; **1928,** I, 28; **1929,** I, 26; **1930,** I, 32; **1931,** I, 14; **1932,** I, 15; **1933,** I, 17; **1934,** I, 21; **1935,** I, 19; **1936,** I, 17; **1937,** I, 20; **1938,** I, 23; **1939,** I, 16; **1940,** I, 12.
gall mite	*see under* Black Currant Gall Mite.
propagation	*see under* Propagation, red currants.
varieties–	
collections, trials, and classification	notes on, **1919-20,** 6; **1926,** II, 37; **1927,** II, 41; **1928,** II, 38; **1934,** II, 42; **1935,** II, 41; **1936,** II, 47; **1937,** II, 56; **1938,** II. 55; **1941,** II, 17; **1948,** II, 29; **1949,** II, 27. Methods of identifying main groups of red currants, **1928,** II, 38. **Red currant varieties,** by J. Amos: keys to identification from leaves; general notes on growth at East Malling, **1928,** IV, 73.
virus diseases	two forms of degeneration as possible virus diseases, **1953,** II, 40.
Red Leaf Aphid	*see under* Rosy Leaf-curling Aphid.
'Red Plant', strawberries	invasion by Strawberry Eelworm produces condition known as Red Plant, **1947,** III, 144. Associated with *Corynebacterium fascians,* **1951,** II, 40.
Red Plum Maggot	*see under* Plum Fruit Moth.
,, raspberry	*see under* Raspberries, red.
,, Raspberry Mosaic	*see under* Raspberry Mosaic.
,, Spider Mite	observations on, **1925** (S), III, 158; **1929,** II, 64; **1928-29-30** (S), III, 192; **1931,** III, 51; **1932,** III, 115; **1933,** III, 176; **1935,** II, 75, III, 164; **1937,** III, 165; **1949,** II, 44; **1950,** II, 43, III, 147; **1951,** II, 44; **1952,** II, 41. Spray formula for Hop Red Spider—liver of sulphur 10 oz., water 100 gal., sulphonated lorol 6 oz., **1934,** III, 165. Hop Red Spider completely eradicated by application of a pyrethrum spray applied in the spring, **1936,** II, 68. Aphid and red spider population is materially reduced when burning strawberry beds is thorough, **1937,** II, 96. Control of Hop Red Spider Mite by lime-sulphur spray replacing liver of sulphur spray, **1938,** III, 184. Phytocidal tests with lime-sulphur in the latter part of May and in June have proved very promising, **1939,** II, 36. Quite safe to apply a 1% lime-sulphur spray to the young hop bine in May and June without causing damage to bine, **1940,** II, 30.

Red Spider Mite–*continued*

The control of the Hop Red Spider, by A. M. Massee and R. M. Greenslade: control by lime-sulphur spray, **1940,** IV, 94. In greenhouses, **1941,** III, 51. Observations on Hop Red Spider, **1944,** III, 82. **The Hop Red Spider (*Tetranychus telarius* L.),** by A. M. Massee: most important control measure is 1% lime-sulphur spray in May or early June, **1944,** IV, 126. Hop Red Spider controlled by applying a 1% lime-sulphur spray when new growth reaches the tie wire, **1947,** III, 139. **The Hop Red Spider (*Tetranychus urticae* Koch),** by A. M. Massee: measures for control in field brought up to date, **1947,** IV, 187. Severe attack followed application of DDT to control midge on black currants, **1949,** II, 29, III, 130. **The Greenhouse Red Spider Mite, *Tetranychus urticae* Koch, on apples in East Anglia,** by Elsie Collyer: noticed in all cases where parathion used as acaricide, **1952,** III, 159.

„ „ „ , Fruit Tree — *see under* Fruit Tree Red Spider Mite.

„ „ „ , Gooseberry — *see under* Gooseberry Red Spider Mite.

„ „ „ , Greenhouse — *see under* Red Spider Mite.

Red spider mites (other than those separately listed) — observations on, **1949,** II, 44; **1950,** II, 43; **1951,** II, 44; **1952,** II, 41. A red spider mite (*Amphitetranychus viennensis*=*Tetranychus crataegi*) on prune, **1943,** III, 64.

„ „ , Strawberry — *see under* Red Spider Mite.

„ Velvet Mite — observations on, **1928-29-30 (S),** III, 190.

Repellents — *see under* Apple Blossom Weevil; Rabbit repellents.

Research, review of — *see under* Amos Memorial Lectures; Biochemistry Section; East Malling Research Station; Entomology Section; Plant Pathology Section; Plant Physiology Section; Plant Protective Chemistry Section; Pomology Section; Statistics and Records Section.

Reseda lutea — extract shown to have fungicidal activity, **1942,** II, 26.

Residues — *see under* Spray residues.

Reversion, Black Currant — *see under* Black Currant Reversion.

„ , Rubi — *see under* Rubus Stunt.

Rhabdospora ramealis — *see under* Purple Blotch, blackberries.

Rhinosimus planirostris — *see under* Beetles, general.

Rhizoctonia crocorum — *see under* Violet Root Rot.

„ *violacea* — *see under* Violet Root Rot (carrots).

Rhizopus nigricans — soft rot attacking peach, **1926-27 (S),** III, 82.

Rhododendron Bug — notes on, **1928-29-30 (S),** III, 199.

Rhopalosiphum insertum — *see under* Oat-Apple Aphid.

Rhubarb Rust — notes on, **1926-27 (S),** III, 118.

„ Wilt — *see under* Verticillium Wilt, rhubarb.

Rhynchites aequatus — *see under* Apple Fruit Rhynchites.

„ *caeruleus* — *see under* Apple Twig Cutter.

„ *germanicus* — *see under* Strawberry Rhynchites.

„ *minutus* — not observed feeding on strawberries, **1945,** III, 91.

Ribes aphids — observations on, **1949,** II, 44.

„ *longeracemosum* — used for breeding with black currant, **1948,** II, 30.

„ virus diseases — *see also under* Black currants, virus diseases; Gooseberries, virus diseases; Red currants, virus diseases.
New virus diseases of *Ribes*, by A. F. Posnette: describes Vein-

Ribes virus diseases–*continued*

banding of gooseberries, Vein-pattern disease of black currants, and Yellows of black currants, **1951,** III, 133.

Ring Spot and Shot Hole, plums — *see under* Plum Ring Spot and Shot Hole.

Ripe Rot, grapes — notes on, **1928-29-30** (S), III, 129.

Roesleria hypogaea — *see under* Roesleria Root Rot.

Roesleria Root Rot — notes on, **1924,** III, 115; **1925** (S), III, 81.

Root cuttings — *see under* Propagation, cuttings, root.

,, development studies — *see also under* Defeathering; Growth; Histological investigations; Hops, root studies; Pruning; Rootstocks; Scion on root, effect of; Soil moisture meters; Tree size; Tree vigour.
notes on, **1922,** 28; **1928,** II, 36; **1929,** II, 34; **1930,** II, 40; **1931,** II, 23; **1932,** II, 25; **1933,** II, 29; **1934,** II, 37; **1935,** II, 32, 36; **1936,** II, 36; **1937,** II, 43; **1938,** II, 43; **1947,** II, 26; **1952,** II, 23, 30, 45; **1953,** II, 25. **Some factors influencing root development,** by R. G. Hatton, N. H. Grubb, and J. Amos, **1923,** III, 110. **The root systems of some ten year old apple trees on two different rootstocks, and their relation to tree performance,** by W. S. Rogers and M. C. Vyvyan: ratio of stem to root was about the same in M.IX as in M.I but that of fruit to root was more than twice as great in M.IX as in M.I, **1926-27** (S), III, 31. **Root studies. IV. A method of observing root growth in the field: illustrated by observations in an irrigated apple orchard in British Columbia,** by W. S. Rogers: by fixing glass windows against soil wall in observation trench, **1933,** III, 86. **Plum rootstocks: a note on some root-systems,** by E. G. Ing, **1933,** III, 108. **The root-systems of some Bramley's Seedling apple trees,** by A. Beryl Beakbane and A. F. de Wet: 3 fifteen-year-old trees excavated and root systems described, **1934,** III, 87. **A comparison of the root-systems of mature trees of Bramley's Seedling and Worcester Pearmain on various rootstocks,** by W. A. Bane, F. H. Beard, and A. F. de Wet, **1934,** III, 90. **The root systems of some three-year-old trees of Lane's Prince Albert on two selected rootstocks (Malling No. II×Northern Spy),** by H. M. Tydeman: root systems shown to be widely different and differences thought to be of genetic origin, **1935,** III, 107. **Some observations on the roots of fruit trees,** by W. S. Rogers, **1935,** IV, 210. **The root systems of some new varieties of apple rootstock,** by H. M. Tydeman: describes results of analysis of root systems of four-year-old trees of Lane's Prince Albert on nine rootstocks raised from seed, **1936,** III, 87. The typical rootstock influence is present in both stem and root worked trees; introduction of piece of stem of Normanischer Cider Apfel influenced size of M.IX root system making it slightly larger than on Early Victoria; although it reduced, it did not eliminate the difference in size between root systems of M.IX and M.XII, **1937,** II, 43.

Rooted shoots–

apple — *see also under* Spray culture; Water culture.

plum — number of rooted shoots greater on short layers than on long, and in regions near the base of parent plant than farther away; shoots from buds on the under surface and sides of layers rooted better than those from buds on the upper surface; rooting performance improved without reducing the total number of shoots by shortening layers to about 2 ft. and by rubbing certain buds; basal portion of shoot rooted best in hardwood cuttings that included the etiolated base, **1940,** II, 21.

Root excavations — *see under* Root development studies.

Root-knots — *see under* Burr-knots.

,, Lesion nematodes — notes on, **1953,** II, 44.

,, rots — *see under* Armillaria Root Rot; Black Root Rot; Roesleria Root Rot.

Rootstocks– — *see also under* Propagation (with which this subject is intimately connected).

analysis–

chemical — notes on, **1952,** II, 32. To elements isolated must be added molybdenum in woody parts of M.IX below graft level but absent from all parts above graft level and also from bark below graft level, **1929,** II, 63.

spectrographic — elements in rootstocks, **1928-29-30** (S), III, 101.

anatomical studies — *see under* Histological investigations; Rootstocks, resistance to Woolly Aphid.

apple — *see also under* Breeding, top fruits, rootstocks, apple; Carbon dioxide; Double-working, apples; Histological investigations; Intensive fruit culture; Root development studies; Rootstocks (appropriate headings); Rubbery Wood.
notes on, **1925,** II, 37; **1926,** II, 35; **1927,** II, 37; **1928,** II, 35; **1929,** II, 33, 59; **1930,** II, 39; **1931,** II, 21; **1932,** II, 23; **1933,** II, 27; **1934,** II, 33; **1935,** II, 27, 36; **1936,** II, 29; **1937,** II, 38; **1938,** II, 37; **1939,** II, 20; **1940,** II, 15; **1941,** II, 14; **1942,** II, 14; **1943,** II, 15; **1944,** II, 17; **1945,** II, 17; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23; **1949,** II, 21; **1950,** II, 21; **1951,** II, 25; **1952,** II, 21; **1953,** II, 23. Apple collection and trial of Paradise rootstocks from Britain, Germany, France, and Holland, **1913-14,** 1. Characteristics of Paradise rootstocks, **1914-15,** 1. Selection and trial of Paradise rootstocks, **1915-16,** 1. Report on Paradise rootstocks and notes on their selection and trial, **1916-17,** 1. Notes on Paradise rootstock trials, **1917-18,** 3; **1918-19,** 11; **1919-20,** 5. Rootstocks divided into those raised from seed i.e. the Free or Crab rootstocks, and those raised from layers, the so-called Paradise rootstocks; gives further details of the different Paradise rootstocks, **1922,** 21. Seventeen acres of eleven varieties upon selected rootstocks under observation on seven different soils, **1923,** II, 81. Statistical proof of comparative differences collected, **1924,** II, 37. **Apple root-stocks, their particular suitabilities for different soils, varieties and purposes,** by R. G. Hatton: a summary, **1925,** IV, 46. **Root stock effect on colour and size of apples,** by W. S. Rogers: very dwarfing rootstock M.IX has usually produced most colour while M.II tends to give less colour than more vigorous M.I; M.IX has given largest fruits in some years—M.I has given larger fruits than M.II; details given of experimental methods used in estimating size and colour, **1925** (S), III, 16. **Preliminary observations on the causes of stock influence in apples,** by R. C. Knight: stem as well as root system of a rootstock may play a considerable part in influencing the scion; the vegetative union of a scion with two stocks of different character produces a tree the vigour of which is intermediate in type, **1925** (S), III, 51. **Characteristics and suitability of the so-called 'Paradise' stocks,** by R. G. Hatton: notes collected by, **1926,** IV, 47. **The Northern Spy apple as a rootstock,** by R. G. Hatton: under East Malling conditions Spy could be classed as a semi-dwarfing rootstock of the Doucin (M.II) group, but comparing unfavourably with it in early cropping, **1926-27** (S), III, 44. **The influence of rootstocks on the blossoming of seedling apples: a progress report,** by H. M. Tydeman, **1926-27** (S), III, 51. **A note on the orientation of main branches and its relation to stock in some 'double-stock'**

apple trees, by R. C. Knight: in a series, each of which was grafted on two stocks (one on each side of scion) of different vigour, the largest branches were not necessarily those on the side of the strongest rootstock, but those emerging from the highest part of the main stem, **1926-27** (S), III, 56. Effects of manuring, **1928-29-30** (S), III, 18. **Course of growth in an apple stock during the maiden year,** by M. C. Vyvyan, **1928-29-30** (S), III, 85. **Apple harvesting investigations,** by R. C. Palmer: influence of rootstocks on, **1932,** III, 55. **The testing of new varieties of apple rootstock: a progress report,** by H. M. Tydeman, **1933,** III, 94. **East Malling's experiences with apple rootstocks,** by R. G. Hatton, **1934,** IV, 223. Trial of Cox and Worcester Pearmain on M.I, M.II, M.VII, M.IX, and M.XVI on different soils, **1936,** II, 43; **1937,** II, 52; **1938,** II, 51. **The rootstock Malling Crab C,** by R. J. Garner, **1945,** IV, 126. **The recognition of some apple and plum rootstocks in the nursery,** by R. J. Garner, **1945,** IV, 130. **Apple rootstocks as an outdoor host for mass infection and fungicide testing,** by M. H. Moore, **1946,** III, 118. **An intensive field method for testing fungicides for apple trees,** by M. H. Moore, **1951,** III, 139. **A description and classification of the Malling-Merton and Malling XXV apple rootstocks,** by H. M. Tydeman, **1952,** III, 55. **The nursery behaviour of the Malling-Merton and Malling XXV apple rootstocks,** by R. J. Garner, **1952,** III, 64. **Five new apple rootstocks,** by A. P. Preston, **1952,** IV, 169. Eighteen apple rootstocks budded with pears for a study of differential preference, **1953,** II, 23. **A description of certain M.IX crosses,** by H. M. Tydeman, **1953,** III, 86. **Apple rootstock studies: the M.IX crosses,** by A. P. Preston, **1953,** III, 89.

apricot — notes on, **1938,** II, 41; **1950,** II, 21.

breeding — *see under* Breeding, top fruits, rootstocks.

carbon dioxide — *see under* Carbon dioxide.

certification scheme — particulars of, **1947,** IV, 181.

chemical analysis — *see under* Rootstocks, analysis.

cherry — *see also under* Breeding, top fruits, rootstocks, cherry; Double-working, cherries; Histological investigations; Rootstocks (appropriate headings).
notes on, **1915-16,** 4; **1917-18,** 5; **1918-19,** 12; **1922,** 27; **1923,** II, 83; **1924,** II, 38, III, 100; **1925,** II, 38; **1926,** II, 36; **1927,** II, 38; **1928,** II, 36; **1929,** II, 33; **1930,** II, 40; **1931,** II, 23; **1932,** II, 24; **1933,** II, 28; **1935,** II, 30; **1936,** II, 33; **1937,** II, 40; **1938,** II, 41; **1940,** II, 15; **1942,** II, 14; **1943,** II, 15; **1944,** II, 17, 18; **1945,** II, 17; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23; **1950,** II, 21; **1951,** II, 25; **1953,** II, 23. First records taken, **1914-15,** 5. **Cherry stocks: their behaviour in the nursery,** by N. H. Grubb and A. W. Witt: F12/1 is the stoutest wooded and stiffest of all selections, **1924,** III, 87. Susceptibility to Cherry Blackfly, **1928,** II, 109. **A résumé of the cherry rootstock investigations,** by N. H. Grubb, **1939,** III, 41. Acid cherry rootstocks blown over to 45° while those on sweet cherry rootstocks were undisturbed, **1946,** II, 16. Trunks of trees on mazzard are as thick below the union as they are above, while those on acid rootstocks are very much smaller below than above union, **1947,** II, 21. Leitzkauer Pressauerkirsche, acid cherry rootstock from Germany, **1948,** II, 23. Two selected mazzards from N.W. Germany reported to be resistant to Bacterial Canker, **1949,** II, 22. Trees imported from Australia in 1947 on Kentish cherry, a dwarfing but normally incompatible stock, are alive and growing, **1950,** II, 21. Sweet cherry rootstock (*P. avium*) which

Rootstocks–cherry–*continued*

appears to be somewhat dwarfing has been propagated for field trial; studies on Mahaleb cherries from New Zealand for compatibility tests with sweet cherry scions, **1952,** II, 21.

general — *see also under* Double-working; Mineral composition, apple trees; Mineral nutrition; Nursery work; Root development studies; Wildings.
The choice of young fruit trees, by R. G. Hatton, J. Amos, and N. H. Grubb, **1924,** III, 93. **The elimination of sources of error in field experiments. The standardization of fruit tree stocks,** by R. G. Hatton, **1928-29-30** (S), III, 13. **Apple harvesting investigation,** by R. C. Palmer: influence of rootstocks, **1932,** III, 55. **A note on the moisture content of the stems of different rootstocks,** by M. C. Vyvyan, **1935,** III, 131. Inarching to improve poor rootstocks, **1936,** II, 30; **1939,** II, 20. **A practical evaluation of rootstocks in commercial circulation,** by N. B. Bagenal, R. J. Garner, and R. G. Hatton, **1936,** IV, 281. **Preliminary observations on the carbohydrate content of apple leaves on different rootstocks,** by E. R. Leonard: dwarfing precocious stock had leaves of consistently higher content throughout a 24-hour cycle, **1937,** III, 173. **Note on the effect of the variety of stock used to provide the intermediate stem-piece in some double-worked apple trees,** by M. C. Vyvyan, **1938,** III, 148. **The present status of research in rootstock plants and the use of rootstock plants,** by R. G. Hatton, **1939,** III, 37. Quality of material, **1942,** IV, 91. **A guide to the use of fruit tree rootstocks,** by R. J. Garner, **1944,** IV, 98. **Accelerating rootstock research,** by A. Beryl Beakbane and Eleanor C. Thompson, **1944,** IV, 106. **Apple rootstocks as an outdoor host for mass infection and fungicide testing,** by M. H. Moore, **1946,** III, 118. **An expedition to France to study fruit tree rootstocks, June 1947,** by A. Beryl Beakbane, **1947,** III, 76. Persistence of rootstock effect throughout life of tree, **1948,** II, 23. **Research on fruit tree rootstocks,** by T. N. Hoblyn, **1950,** IV, 193. **An intensive field method for testing fungicides for apple trees,** by M. H. Moore, **1951,** III, 139. **A sport in the apple rootstock Malling XIII,** by R. J. Garner and Elizabeth Keep, **1953,** III, 121.

in Germany — notes on, **1945,** II, 17; **1946,** II, 17.

histological investigations — *see under* Histological investigations; Rootstocks, resistance to Woolly Aphid.

influence on– — *see also under* Rootstocks, resistance to.

Apple Canker — notes on, **1920-21,** 5; **1924,** II, 107; **1926,** II, 58; **1933,** III, 166.

blossoming — seedling apples, **1926-27** (S), III, 51.

Branch Blister — *see under* Branch Blister.

disease, general — notes on, **1920-21,** 5; **1924,** II, 107; **1926,** II, 57.

growth — **A note on the orientation of main branches and its relation to stock in some 'double-stock' apple trees,** by R. C. Knight, **1926-27** (S), III, 56. **Course of growth in an apple stock during the maiden year,** by M. C. Vyvyan, **1928-29-30** (S), III, 85. **The distribution of growth between roots, stems and leaves in a young apple tree and its possible bearing on the problem of stock effect on tree vigour,** by M. C. Vyvyan, **1933,** III, 122.

leaf relations — notes on, **1928,** II, 87; **1929,** II, 59; **1930,** II, 77; **1931,** II, 32; **1932,** II, 36; **1933,** II, 43.

Leaf scorch — *see under* Leaf scorch, apples.

root system — *see under* Root development studies.

Rootstocks–influence on–*continued*

spray damage — **The influence of rootstock on spray damage in apple,** by A. P. Preston, M. H. Moore, and Margery Bennett, **1950,** III, 132.

peach — *see also under* Histological investigations; Rootstocks (appropriate headings).
notes on, **1923,** II, 82; **1925,** II, 38; **1929,** II, 33; **1930,** II, 40; **1932,** II, 24; **1933,** II, 28; **1935,** II, 30; **1936,** II, 33; **1937,** II, 40; **1938,** II, 41; **1945,** II, 17; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23; **1950,** II, 22; **1952,** II, 21. **Peach stock trials: a progress report,** by A. W. Witt and R. J. Garner, **1928-29-30** (S), III, 22.

pear — *see also under* Breeding, top fruits, rootstocks, pear; Double-working, pears; Histological investigations; Intensive fruit culture; Rootstocks, quince; Rootstocks (other appropriate headings).
notes on, **1918-19,** 11; **1920-21,** 5; **1922,** 25; **1923,** II, 82; **1924,** II, 37, III, 99; **1925,** II, 37; **1926,** II, 35; **1928,** II, 35; **1929,** II, 33; **1931,** II, 22; **1932,** II, 24; **1933,** II, 28; **1934,** II, 35; **1935,** II, 29; **1936,** II, 31; **1937,** II, 39; **1938,** II, 40; **1943,** II, 15, 16; **1945,** II, 17; **1947,** II, 21; **1949,** II, 21; **1950,** II, 21; **1951,** II, 25; **1952,** II, 21; **1953,** II, 23. **Rootstocks for pears,** by R. G. Hatton, **1934,** III, 75. **Pear rootstocks from seed. I. Experiments on methods of germinating pear seeds,** by H. M. Tydeman, **1938,** III, 103. **Pear rootstocks from seed. II. Studies on the variation in seedling pear trees,** by H. M. Tydeman, **1938,** III, 110.

plum — *see also under* Breeding, top fruits, rootstocks, plum; Double-working, plums; Histological investigations; Root development studies; Rootstocks (appropriate headings); Weedkillers, general.
notes on, **1915-16,** 3; **1916-17,** 5; **1917-18,** 4; **1918-19,** 12; **1922,** 26; **1923,** II, 82; **1924,** II, 38, III, 96; **1925,** II, 37; **1926,** II, 36; **1927,** II, 37; **1928,** II, 35; **1929,** II, 33; **1930,** II, 39; **1931,** II, 22; **1932,** II, 24; **1933,** II, 28; **1934,** II, 35; **1935,** II, 29; **1936,** II, 32; **1937,** II, 40; **1938,** II, 40; **1939,** IV, 79; **1940,** II, 15; **1941,** II, 14; **1942,** II, 14; **1943,** II, 15; **1944,** II, 18; **1945,** II, 17; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23, 25; **1949,** II, 21; **1950,** II, 21; **1951,** II, 25; **1952,** II, 21, 22; **1953,** II, 23. First records taken, **1914-15,** 5. Disease of Common Mussel rootstock, **1932,** III, 83. **New varieties of rootstock for plums: a preliminary report on trials with seedlings of *Prunus divaricata,*** by H. M. Tydeman, **1933,** III, 100. Ackermann's plum from Germany, **1936,** II, 35. **New varieties of rootstock for plums. II. A final report on seedlings of *Prunus divaricata,*** by H. M. Tydeman: account of trials with 150 seedlings collected from 30 wild trees of *Prunus divaricata* growing in various localities in S.E. Europe and Asia Minor, **1936,** III, 100. Production of natural hormones in, **1940,** II, 21. **The recognition of some apple and plum rootstocks in the nursery,** by R. J. Garner, **1945,** IV, 130. Yellow Kroosjespruim, used in Holland for peaches, collected for testing, **1950,** II, 22. Trees on Myrobalan B maintained lead in crop yields, **1951,** II, 25. Notes on gage plum rootstock trials, **1953,** II, 23. Plum (Morrison's), reputed of wide compatibility, received from New Zealand, **1953,** II, 24.

propagation — *see under* Propagation, rootstocks.

quince (for pears) — *see also under* Breeding, top fruits, rootstocks, pear; Double-working, pears; Histological investigations; Intensive fruit culture; Rootstocks, pear; Rootstocks (other appropriate headings).
notes on, **1915-16,** 4; **1916-17,** 5; **1917-18,** 4; **1918-19,** 2; **1920-21,** 5; **1922,** 25; **1923,** II, 81; **1924,** II, 37; **1925,** II, 37; **1926,** II, 35; **1931,** II, 22; **1932,** II, 24; **1933,** II, 28; **1934,** II, 35; **1935,** II, 29; **1936,** II, 31; **1937,** II, 39, III, 183; **1938,** II, 40; **1941,** II, 14;

Rootstocks–quince (for pears)–*continued*

1947, II, 21; **1949,** II, 21; **1950,** II, 21; **1952,** II, 21; **1953,** II, 23. First records taken, **1914-15,** 5. **The wild fruit trees of the Caucasus and Turkestan. Their potentialities as rootstocks for apples and pears. I. A first report on some wild quince from the Caucasus,** by H. M. Tydeman, **1937,** III, 103. **Descriptions of some quince rootstocks,** by H. M. Tydeman, **1947,** III, 59. **The nursery behaviour of the Williams' Bon Chrétien pear when worked upon a wide range of quince rootstocks,** by R. J. Garner, **1947,** III, 65. **Trials with new quince rootstocks,** by H. M. Tydeman: describes trials with quinces from Near East; trees of the Dr. Jules Guyot were poor, but Conference were healthy, **1948,** III, 68.

resistance to– *see also under* Rootstocks, influence on.

Apple Scab and/or Apple Mildew notes on, **1924,** II, 108; **1926,** II, 57, 58; **1927,** II, 55; **1926-27** (S), III, 96; **1928,** II, 97; **1929,** II, 67; **1930,** II, 87; **1931,** II, 40; **1951,** II, 25.

Bacterial Canker *see under* Bacterial Canker.

Crown Gall *see under* Crown Gall, apples.

Green Apple Aphid *see under* Green Apple Aphid.

Woolly Aphid *see also under* Breeding, top fruits, rootstocks, apple.
notes on, **1920-21,** 5; **1923,** II, 93; **1930,** II, 83, 101; **1931,** II, 41; **1932,** II, 44; **1933,** II, 52; **1934,** II, 68; **1936,** II, 30, 68; **1940,** II, 16; **1941,** II, 14; **1942,** II, 14; **1943,** II, 15; **1946,** II, 16; **1947,** II, 21; **1948,** II, 23; **1949,** II, 21; **1951,** II, 25; **1952,** II, 21; **1953,** II, 23, 24. **Preliminary experiments on the physiology of the resistance of certain rootstocks to attack by Woolly Aphis,** by W. A. Roach and A. M. Massee, **1928-29-30** (S), III, 111. **The resistance of certain apple stocks to attacks of the Woolly Aphis,** by A. M. Massee, **1928-29-30** (S), III, 202. Causes of resistance to Woolly Aphid, **1931,** II, 34. Results suggest that rate of reproduction of Woolly Aphids was more depressed by Northern Spy (immune) than by Allington Pippin (susceptible) extract, **1931,** II, 41. Immunity to Woolly Aphid due to chemical causes, **1933,** II, 52. **A progress report on the causes of immunity to the Apple Woolly Aphis (*Eriosoma lanigerum* Hausmann),** by R. M. Greenslade, A. M. Massee, and W. A. Roach: results suggest that the cause of immunity or susceptibility is carried by a substance which is insoluble in alcohol and soluble in ether, **1933,** III, 220. Cause of immunity or susceptibility not extracted except in small amount by alcohol, ether, or boiling water, and after successive extractions with these three solvents most of it remains in the residue, **1934,** II, 68. Highest degree of immunity was in group Long Ashton OF5 × Northern Spy which gave 46·7% immune, **1934,** II, 68. **Apple rootstocks immune from Woolly Aphis: a progress report on trials with new varieties,** by H. M. Tydeman, **1934,** III, 115. **A note on the treatment of dormant nursery stock against Woolly Aphis,** by R. M. Greenslade: dip and fumigation concentrations recommended for use against Woolly Aphis on dormant stocks have no ill effect on subsequent growth of the rootstocks, **1935,** III, 184. **Apple rootstocks immune from Woolly Aphis. II. The testing in the nursery of new seedling immunes,** by H. M. Tydeman, **1939,** III, 44. **Apple rootstocks immune from Woolly Aphis. III. The influence of four new seedling immunes on Lane's Prince Albert,** by H. M. Tydeman, **1939,** III, 46. **Preliminary selection of apple rootstocks immune from Woolly Aphis based on certain anatomical differences in root structure,** by A. Beryl Beakbane, Eleanor C. Thompson, and H. M. Tydeman, **1940,** III, 32. Lane's Prince Albert on 24 new

Rootstocks–resistance to–Woolly Aphid–*continued*

rootstocks immune to Woolly Aphid, **1945,** II, 17. Trial of Lane's Prince Albert on rootstocks tested for immunity to Woolly Aphid, **1948,** II, 23. New apple rootstocks tested for resistance to Woolly Aphid, **1949,** II, 21. Inoculation made to test resistance of certain apple rootstocks, **1950,** II, 42. Younger apple rootstock trials continue to grow well, **1951,** II, 25. Woolly Aphid resistant rootstocks now named Malling-Merton series, **1952,** II, 21.

rootstock and scion–

growth relations, analysis of — notes on, **1935,** II, 52; **1936,** II, 57; **1937,** II, 67; **1938,** II, 67; **1939,** II, 25; **1949,** II, 33; **1950,** II, 30; **1951,** II, 34; **1952,** II, 29; **1953,** II, 32. **Progress in the study of rootstock-scion interaction,** by M. C. Vyvyan and D. H. Maggs, **1953,** III, 141.

mutual influence of, including incompatibility — *see also under* Double-working; Histological investigations; Scion on root, effect of.

notes on, **1927,** II, 50; **1928,** II, 36; **1929,** II, 34; **1930,** II, 40; **1935,** II, 31, 55; **1936,** II, 34, 61; **1937,** II, 42, 71; **1938,** II, 42, 72; **1942,** II, 14; **1947,** II, 22; **1948,** II, 23; **1950,** II, 21; **1951,** II, 25, 27; **1952,** II, 21, 22; **1953,** II, 23. **Preliminary observations on the causes of stock influence in apples,** by R. C. Knight, **1925** (S), III, 51. **The chemistry of the rootstock-scion effect. I. The elements absorbed from the soil: a progress report,** by W. A. Roach: examination of ashes showed that lead was restricted to the roots and molybdenum occurred only in roots and rootstock of trees on M.IX and was absent from all parts of trees on M.XII, **1928-29-30** (S), III, 101. **The chemistry of the rootstock-scion effect. II. Methods for testing the effects of substances in solution on fruit trees: a progress report,** by W. A. Roach, **1928-29-30** (S), III, 105. **Further observations on the parts played by root and stem in stock influence,** by R. C. Knight, **1933,** III, 114. **Studies in incompatibility of stock and scion. I. Information accumulated during twenty years of testing fruit tree rootstocks with various scion varieties at East Malling,** by J. Amos, T. N. Hoblyn, R. J. Garner, and A. W. Witt, **1935,** III, 81. **Studies in incompatibility of stock and scion. II. The relation between time of budding and stock-scion compatibility,** by R. J. Garner and D. H. Hammond: time of budding, using buds of Hale's Early Peach, did not exercise any lasting effect, if at all, upon stock-scion compatibility, **1937,** III, 154. **The role of manurial nutrition in the rootstock-scion effect: a progress report,** by W. A. Roach, **1946,** III, 88. Experiments started on reciprocal influence of scion and rootstock, **1950,** II, 30. Structure of graft union, the condition of inner bark above and below the union, and the distribution of starch in different parts of the tree are related to compatibility, **1951,** II, 25. **Progress in the study of rootstock-scion interaction,** by M. C. Vyvyan and D. H. Maggs, **1953,** III, 141.

water relations — *see under* Water relations.

spectrographic analysis — *see under* Rootstocks, analysis.

virus diseases — rootstocks as test plants for Apple Mosaic, **1951,** III, 128. Virus infection in rootstocks and precautions against, **1951,** III, 131; **1952,** IV, 180; **1953,** III, 150.

walnut — *see under* Walnuts, general.

Root systems — *see under* Root development studies.

Rose Leafhopper — notes on, **1933,** III, 178; **1940,** III, 64. Tested as vector of Yellow-edge, **1936,** II, 84. Tested as vector of Crinkle, **1940,** II, 26.

,, Thrips — tested to see if vector of Hop Mosaic or Nettlehead, but not successful, **1942,** II, 29.

Rosette, cherries — *see under* Cherry Rosette.

Rosy Apple Aphid — *see also under* Apple aphids; Apple Mosaic.
observations on, **1938,** III, 183; **1948,** III, 105. Alternative hosts are Greater Plantain (*Plantago major*) and Ribwort (*Plantago lanceolata*), **1934,** III, 168. Apparent inhibition effect of phosphate when injected, **1938,** II, 73. **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

,, Leaf-curling Aphid — observations on, **1939,** III, 72; **1949,** III, 129. **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

Rotenone — *see under* Apple Blossom Weevil; Derris.

'Rough Bark' Canker, apples — notes on, **1935,** III, 143.

Rove Beetle — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Royle, C. T. — an appreciation, **1951,** 15.

Rubber strips — **The use of rubber strips in budding fruit trees,** by R. J. Garner, **1933,** IV, 263.

Rubbery Wood — notes on, **1950,** II, 39; **1951,** II, 41; **1952,** II, 36. **Abnormal lignification in the wood of some apple trees,** by A. Beryl Beakbane and Eleanor C. Thompson: Rubbery Wood due to lack of lignification in many of the xylem fibres and vessels, **1944,** III, 36. **Recognition of 'Rubbery' condition in Lord Lambourne and some other apple varieties,** by A. Beryl Beakbane and Eleanor C. Thompson: staining method (phloroglucinol plus hydrochloric acid); normal wood becomes red all over, while 'Rubbery' wood shows white area, **1944,** IV, 108. **Experiments on Rubbery Wood disease of apple trees: a progress report,** by I. W. Prentice: assessed by bending of stem under a known weight and on incomplete lignification in rubbery wood trees, **1949,** III, 122. Anatomical studies used in identification of Rubbery Wood, **1951,** II, 26. **The rubbery wood virus and apple propagation,** by A. F. Posnette and R. Cropley: using sensitive Lord Lambourne, presence of rubbery wood virus was demonstrated in clonal rootstocks M.I and M.IX at East Malling; tests on M.II, M.III, M.IV, M.VII, M.XII, M.XVI, and Crab C from Research Station beds were negative, but stocks of M.III and M.VIII bought in from a commercial nursery were entirely infected, **1951,** III, 131. Lord Lambourne as an indicator, **1952,** II, 36. **Virus transmissions between *Prunus* and *Malus* species,** by A. F. Posnette: purple pattern on peach is suspected of being caused by rubbery wood virus, **1952,** III, 131. **Distribution of rubbery wood virus in apple varieties and rootstocks,** by A. F. Posnette and R. Cropley: over 90% of Lord Lambourne indicators when grafted with infected material developed symptoms in the year of inoculation, while milder strains required longer to develop symptoms; different degrees of rubberiness can be caused by virus variation; index and indicator buds should be placed on the same side of the rootstock; evidence that disease is distributed by propagation and not from tree to tree, **1953,** III, 150.

Rubi–

physiological disorders — *see under* Functional disorders, Dwarf Lateral Scorch, Rubi.

virus diseases–

general — *see also under* individual Rubi.
use of cane inarching for diagnosing, **1937,** II, 94, 101; **1938,** II, 100 **1939,** II, 29; **1942,** II, 22; **1945,** II, 33.

vectors — *see also under* individual Rubi.
economic vectors of, **1941,** II, 23.

Rubus Aphid — vector of raspberry virus diseases, **1945,** II, 37; **1947,** II, 50; **1949,** II, 51; **1950,** II, 50, III, 127.

Rubus aphids — absence of in 1940, **1940,** III, 63.

,, *henryi* — used as indicator of raspberry virus diseases, **1950,** III, 128.

,, *idaeus* — *see under* Raspberry, red.

,, *laciniatus* — *see under* Parsley-leaved Berry.

,, *occidentalis* — *see under* Raspberry, black.

,, *saxatilis* — used as indicator of raspberry virus diseases, **1950,** III, 128.

,, spp., Leaf Spot — *see under* Cane Spot, *Rubus* spp.

,, *strigosus* — *see under* Raspberry, red, American.

Rubus Stunt — *see also under* Rubi, virus diseases (cane inarching for diagnosing). notes on, **1947,** II, 25, 26; **1948,** II, 29. Vectors, **1941,** II, 23; **1949,** II, 41. Grafting experiments begun, **1945,** II, 33. Research continued, **1946,** II, 36. Largely restricted to Phenomenal Berry and blackberry, but recorded in 1946 on loganberry, **1947,** II, 38. Found in Scotland in raspberries brought from England, **1948,** II, 52.

Runner beans — **Runner bean trials in 1924,** by H. C. Chapelow, **1924,** III, 195.

'Running off', black currants — *see under* Black currants, 'running off'.

Rust–

Antirrhinum — *see under* Antirrhinum Rust.

Blackberry — *see under* Blackberry Rust.

black currants — *see under* Currant Rust.

Cluster Cup — *see under* Cluster Cup Rust.

Currant — *see under* Currant Rust.

Mint — *see under* Mint Rust.

Pine Blister — *see under* Pine Blister Rust.

plums — notes on, **1926-27** (S), III, 82. Favoured by dry summer, **1933,** III, 143. Bordeaux spray at 4-6-100, applied three weeks after petal-fall, gave marked control with only slight spotting of leaves and no leaf drop, **1938,** II, 87. Control of, **1940,** II, 28. Control by (1) removing anemones showing cluster cup stage of Plum Rust from gardens in vicinity of plum orchards, (2) spraying with Bordeaux mixture when the fruit is about half grown, and again, if rust shows signs of spreading, immediately after the fruit has been picked, **1941,** III, 41.

Raspberry — *see under* Raspberry Rust.

Rhubarb — *see under* Rhubarb Rust.

snapdragon — *see under* Antirrhinum Rust.

Sweet William — *see under* Sweet William Rust.

Rusty Mottle — *see under* Cherry Rusty Mottle.

Ryegrass, perennial — *see under* Cover cropping.

Sack bands — *see under* Tree banding.

St. Mark's Fly — observations on, **1939,** III, 72.

Sampling technique — *see under* Statistical studies.

Saponin — use in increasing spreading power of lime-sulphur spray, **1918-19,** 5.

Sappaphis devecta — *see under* Rosy Leaf-curling Aphid.

,, *mali* — *see under* Rosy Apple Aphid.

,, *pyri* — *see under* Pear-Bedstraw Aphid.

Sawflies — *see under* common names of sawflies (for full list of names appearing in Index see pages 158-168).

Scab — *see under* Apple Scab; Cherry Scab; Pear Scab; Plum Scab; Potato Powdery Scab.

Scald — *see under* Storage, apples.

Scale — *see under* Brown Scale; Scurfy (Rose) Scale.

Schecter-Haller method — for estimating small quantities of DDT, **1953,** II, 47.

Schradan — *see also under* Strawberry Aphid.
fungistatic activity of, **1950,** III, 172.

Scientific Liaison Section — (prior to 1948 known as the Technical Section).
general review of research work, **1935,** II, 71; **1936,** II, 77; **1937,** II, 90; **1938,** II, 90; **1939,** II, 36; **1940,** II, 31; **1941,** II, 28; **1942,** II, 30; **1943,** II, 30; **1944,** II, 33; **1945,** II, 44; **1946,** II, 46; **1947,** II, 49; **1948,** II, 51; **1949,** II, 50; **1950,** II, 48; **1951,** II, 49; **1952,** II, 45; **1953,** II, 49.

Scion material — importance of freedom from virus diseases, **1950,** IV, 210; **1952,** IV, 179.

„ on root, effect of — *see also under* Root development studies; Rootstocks, rootstock and scion, mutual influence of, including incompatibility.
amount of fibre or small roots expressed as percentage of total root system decreases as the root grows in size; variety used as scion may influence total amount of root formed by the stock and thus indirectly alter percentage of fibre; distinctive morphological features characteristic of root systems of various stocks not appreciably changed by variety used as scion; root system of stock retains its characteristic feature irrespective of scion variety or of methods of working, **1930,** II, 78. Testing of scion effects on root structure of very young seedling apples, **1952,** II, 22.

„ rooting — *see also under* Histological investigations.
Scion rooting at East Malling Research Station, by R. G. Hatton and N. B. Bagenal: suggests old method of planting the union below ground should be abandoned, **1933,** IV, 243.

„ -rootstock relations — *see under* Rootstocks, rootstock and scion, analysis of growth relations; Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

Sclerotinia americana — *see under* Brown Rot, peaches.

„ *cinerea* — *see under* Brown Rot.

„ *crataegi* — *see under* Hawthorn Leaf Blotch.

„ *cydoniae* — *see under* Leaf Blotch, quinces.

„ *fructicola* — *see also under* Brown Rot, peaches.
use of copper, zinc, and nickel inorganic salts against, **1952,** III, 166.

„ *fructigena* — *see under* Brown Rot.

„ *laxa* — *see under* Brown Rot; Cherry Twig Blight; Wither Tip.

„ *mespili* — *see under* Leaf Blotch, medlars.

Scolytid wood-boring beetles — *see under* Fruit Bark Beetle; Large Fruit Bark Beetle.

Scolytus mali — *see under* Large Fruit Bark Beetle.

„ *rugulosus* — *see under* Fruit Bark Beetle.

Scorch — *see under* Leaf scorch; Spray damage.

Scurfy (Rose) Scale — observations on, **1948,** III, 105.

Scymnus punctillum — *see under* Beneficial insects and mites, predators, general.

Seed, apple — germination of, **1952,** I, 19.

Sehirus bicolor — *see under* Shield Bug.

Septocyta ramealis — *see under* Purple Blotch, blackberries.

Septoria apii — *see under* Leaf Blight, celery.

Septoria Cane Spot, blackberries — *see under* Septoria Spot, blackberries.

,, Leaf Spot — *see under* Leaf Spot, currants, Septoria.

Septoria leucanthemi — *see under* Leaf Blotch, Shasta daisy.

,, *pyricola* — *see under* Leaf Fleck, pears.

,, *rubi* — *see under* Septoria Spot.

Septoria Spot, blackberries — notes on, **1926-27** (S), III, 84; **1928-29-30** (S), III, 138; **1930,** II, 88.

Sesia myopaeformis — *see under* Apple Clearwing Moth.

Seven Spot Ladybird — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite.

Sewage sludge — *see under* Manuring, black currants.

Shallot Aphid — **The Shallot Aphid, *Myzus ascalonicus* Doncaster, a pest of cultivated strawberries,** by G. H. L. Dicker: control by dusting with nicotine or spraying with 0·005% parathion, **1949,** III, 139.

Shasta daisy, Leaf Blotch — *see under* Leaf Blotch, Shasta daisy.

Shattering of hops — *see under* Hops, shattering.

Shedding of fruits, blossoms, and leaves — *see under* Abscission studies; Blossom thinning; Fruit drop; Leaf fall; NAA.

Shield-budding — *see under* Grafting.

,, Bug — *see also under* Forest Bug.
observations on, **1936,** III, 228; **1951,** III, 158; **1953,** III, 165.

Shoot Borer — *see under* Currant Shoot Borer.

,, Wilt, cherries and plums — *see under* Bacterial Canker.

Short-cloaked Moth — observations on, **1939,** III, 70.

Shot Hole — *see under* Bacterial Canker; Plum Ring Spot and Shot Hole.

Shot-hole Beetle — *see under* Shot-hole Borer.

,, ,, Borer — *see also under* Small Shot-hole Borer.
observations on, **1935,** III, 169; **1937,** III, 203; **1940,** III, 62; **1945,** III, 92; **1950,** III, 141.

Shy Bug — *see under* Hop Capsid.

Silicon — *see under* Analysis, chemical, inorganic, silicon.

Silver-green Leaf Weevil — observations on, **1947,** III, 136.

Silver Leaf– — *see also under* Papery Bark Canker.

apples — notes on, **1934,** III, 145; **1936,** II, 64; **1940,** III, 56. Newton Wonder very susceptible; worst was topworking by rind grafting, next came oblique cleft grafting, **1941,** II, 15. Liquid injection not likely to bring about a permanent cure of Silver Leaf, **1943,** II, 24. **Silver Leaf and Papery Bark in apple trees,** by H. B. S. Montgomery and H. Wormald: Silver Leaf followed by severe Papery Bark resulted from hard cutting back and inoculation of the cut surfaces with *Stereum purpureum*, **1943,** III, 51.

general — notes on, **1923,** II, 92; **1939,** III, 60; **1950,** II, 49.

peaches — notes on, **1953,** II, 26.

pears — **Notes on the Silver Leaf disease,** by H. Wormald, **1935,** III, 155.

plums — notes on, **1920-21,** 6; **1922,** 42; **1924,** II, 108; **1927,** II, 39; **1934,** III, 145; **1935,** II, 57; **1936,** II, 64; **1937,** II, 75; **1938,** II, 76; **1939,** IV, 82; **1940,** I, 12; **1942,** I, 14; **1943,** II, 23; **1944,** II, 26; **1953,** II, 41. High percentage of natural recoveries in young trees of certain varieties such as Czar; cutting out silvered branches to

Silver Leaf–plums–*continued*

unstained wood proved successful, **1924,** II, 108. Infected trees should be cut down and burnt before they show fructification, **1934,** III, 145. **Notes on the Silver Leaf disease,** by H. Wormald, **1935,** III, 155. Papery bark condition caused by infection with Silver Leaf fungus, **1937,** II, 75. Precautions when frameworking plums, **1941,** II, 14. Control in plums by injection of disinfectants, **1941,** II, 21. Observations on Victoria plums injected with 8-hydroxyquinoline and related chemicals, **1944,** II, 26. Control of Silver Leaf in plums, **1953,** II, 41.

walnuts — notes on, **1939,** III, 60.

Sinodendron cylindricum — *see under* Beetles, general.

Sitona lineatus — *see under* Pea and Bean Weevil.

Sitones lineatus — *see under* Pea and Bean Weevil.

Size — *see under* Fruit size; Tree size.

Slide-germination — method of assay in fungicide research using *Venturia inaequalis*, **1951,** II, 46. **Modifications in the glass-slide spore-germination test for use in fungicide research,** by A. H. M. Kirby and E. L. Frick, **1952,** III, 161.

Slime fungus — on grass, **1934,** III, 147. On strawberry leaves, **1935,** III, 144, 163.

Slugs — destroying hops in spring, **1926-27** (S), III, 160. Connection with Cane Blight, **1947,** II, 38. **Slug (*Agriolimax reticulatus*) damage to raspberry canes,** by R. S. Pitcher, **1949,** III, 131.

Small Ermine Moth — observations on, **1947,** III, 137; **1951,** III, 157; **1952,** III, 146. **A note on the Small Ermine Moth, *Yponomeuta padella malinella* Zell.,** by G. H. L. Dicker and J. B. Briggs: spring sprays ineffective, **1951,** III, 172.

,, fruit — *see under* Soft fruit.

,, Gooseberry Sawfly — controlled by a lead arsenate or derris spray, **1944,** III, 80.

,, Hop Disease — notes on, **1939,** II, 35.

,, Shot Borer — observations on, **1945,** III, 92.

Snapdragon Rust — *see under* Antirrhinum Rust.

Social Pear Sawfly — observations on, **1941,** III, 48.

Sodium chlorate — *see under* Weedkillers.

,, dinitro-orthocresylate — 1% solution used as defoliant spray to control biennial bearing, **1949,** II, 25.

,, hypochlorite — used to sterilize larvae of *Meloidogyne* and *Heterodera* spp., **1952,** III, 138.

Soft fruit — *see also under* individual fruits or subject. **The revival of small-fruit growing in the light of present day knowledge,** by N. B. Bagenal, R. V. Harris, A. M. Massee, and A. C. Painter, **1932,** IV, 141.

Soft Rot, turnips — notes on, **1925,** II, 63. **Bacterial rot of turnips,** by H. Wormald and R. V. Harris, **1925,** (S), III, 89.

Softwood cuttings — *see under* Propagation, cuttings, stem, softwood.

Soil(s)–

alkaline — **The application of trace elements to alkaline soils: a preliminary note,** by Anne V. Delap, **1949,** III, 116.

analysis — soil organic matter determination; soil structure changes observed by wet-sieving technique showing proportion of water stable aggregates, **1949,** II, 23.

Soil(s)–*continued*

conditioner — **Note on the effect of a synthetic soil conditioner, CRD 189, on the water relationships of a fine sandy loam,** by J. E. Goode: noted that effectiveness of CRD 189 in stabilizing the soil aggregates is beyond dispute and persistence of the stabilization has continued now for eighteen months; no evidence of an effective increase in moisture in equal depths of treated and untreated soils or that evaporation losses from the conditioned soil were reduced, **1953,** III, 123.

disinfectant — naphthalene applied at rate of ½-1 ton per acre did not affect Verticillium Wilt disease of hops, **1942,** II, 29.

effect — *see also under* Mineral nutrition.
suitability of apple rootstocks for different soils, **1925,** IV, 46. Trials of Cox and Worcester Pearmain on M.I, M.II, M.VII, M.IX, and M.XVI on different soils, **1936,** II, 43; **1937,** II, 52; **1938,** II, 51.

fertility — **The maintenance of soil fertility in orchards,** by W. S. Rogers and D. W. P. Greenham, **1948,** IV, 124.

and fruit tree — *see under* Amos Memorial Lectures.

management — *see under* Cover cropping; Manuring; Mulching; Soil variation.

moisture studies — *see also under* Irrigation.
notes on, **1934,** II, 37; **1935,** II, 32; **1936,** II, 36; **1937,** II, 43; **1938,** II, 43; **1941,** II, 15; **1942,** II, 15; **1943,** II, 16; **1944,** II, 19; **1945,** II, 19; **1946,** II, 19; **1947,** II, 23; **1948,** II, 25; **1949,** II, 23; **1950,** II, 22; **1951,** II, 27; **1952,** II, 23, IV, 172; **1953,** II, 25. **The relation of soil moisture to plant growth, illustrated by moisture meter experiments with strawberries,** by W. S. Rogers, **1935,** III, 111. **Soil moisture studies. I. Water utilization by apple trees in cultivated and grass orchard, compared with fallow land,** by W. S. Rogers: plant roots and not evaporation is the controlling factor in water loss at 30 inch depth; grass appears to use up water at 12 inches much more than at 36 inches, **1936,** III, 105. **Soil moisture studies. II. Moisture variation in a pear orchard,** by W. S. Rogers and D. N. Srivastava, **1936,** III, 110. Use of soil moisture meters in apple irrigation trial, **1938,** III, 118. No evidence that lack of soil moisture causes June drop in pears, **1940,** III, 36. Soil moisture in relation to virus expression in strawberry, **1941,** II, 17. Penman and Smith method of estimating soil moisture deficit, **1951,** II, 27; **1952,** IV, 171. Effect of straw mulches on soil moisture relations, **1951,** II, 30.

,, tensiometers — *see under* Soil moisture studies.

studies, general — notes on, **1950,** II, 22; **1951,** II, 27; **1952,** II, 23; **1953,** II, 25.

surveys — **The proposed fruit soils survey in Kent,** by N. B. Bagenal, W. Goodwin, and R. G. Hatton, **1928,** IV, 80. Survey of Lower Greensand, **1929,** II, 36; **1930,** II, 43; **1931,** II, 26; **1932,** II, 30; **1934,** II, 42. Survey of Hastings Beds, **1933,** II, 36; **1935,** II, 38; **1936,** II, 43. **A soil survey of the new Bradbourne experimental orchards,** by A. P. Preston and D. J. Stanton, **1946,** III, 55. **The soils of East Malling Research Station,** by B. S. Furneaux: a soil survey of the research farm, both geology and soils, **1953,** III, 60.

temperature — *see also under* Weather conditions.
records of, **1950,** II, 22. Studies in connection with straw mulch investigations of soft fruit, **1951,** II, 27.

uniformity restoration trial — *see under* Uniformity trials.

variation — **Some aspects of soil variation related to the history and management of the soil,** by J. E. Goode: some examples of variation of tree growth not included in an ordinary soil survey, **1953,** III, 83.

Soldier Beetle — observations on, **1943,** III, 60.

Solenobia inconspicuella — *see under* Tineid Moth.

Somotrichus unifasciatus — *see under* Ground beetles.

Sooty Blotch — notes on, **1926-27** (S), III, 114; **1928-29-30** (S), III, 127; **1931,** III, 48; **1932,** III, 83; **1933,** III, 144; **1939,** III, 61. Caused by *Gloeodes pomigena*; prevalent in 1936, **1936,** III, 189. **The Sooty Blotch disease of apples and plums,** by H. Wormald: blotch reduced by use of Javelle water and by 5% chloride of lime solution, **1936,** III, 194. **Sooty Blotch of apples and plums,** by H. Wormald: a chloride of lime treatment recommended for cleaning fruit, **1936,** IV, 295. Blotches could be made inconspicuous by treating fruit with a solution of bleaching powder (5%) and exposing it to the air for 10 minutes; fruit then washed and allowed to dry, **1937,** II, 77. Apples treated with chloride of lime remained clean after cold storage, **1937,** III, 183.

,, Mould, plums — due to species of *Coniothecium* on honeydew of Mealy Plum Aphid, **1940,** III, 57.

Special Stock Certificate Schemes — *see under* Certification schemes.

Spectrographic analysis — *see under* Analysis, spectrographic.

Spectrometer, mass — *see under* Analysis, mass spectrometer.

Sphaeroblast shoots — notes on, **1953,** II, 24.

Sphaeropsis sp. — *see under* Black Rot, apples.

Sphaerotheca grossulariae — *see under* Gooseberry Mildew, European.

,, *humuli* — *see under* Hop Mildew; Raspberry Mildew; Strawberry Mildew.

,, *mors-uvae* — *see under* Gooseberry Mildew, American.

Sphaerozetes lapidarius — *see under* Beetle Mite.

Spilonota ocellana — *see under* Bud Moth.

Spilosoma lubricipeda — *see under* Buff Ermine Moth.

Spiraea arunchus — extract shown to have fungicidal properties, **1942,** II, 26.

Split Leaf Blotch, hops — notes on, **1939,** II, 35; **1946,** II, 45; **1947,** II, 47; **1948,** II, 49; **1949,** IV, 177; **1950,** II, 40; **1951,** II, 41; **1952,** II, 36, III, 120. Shown to be graft transmissible, **1942,** II, 29. Recorded on plants used in graft transmission experiments in 1946, **1948,** II, 49. Analytical experiments by graft transmission, **1950,** II, 40. Experiments on insect vectors, **1953,** II, 39.

Splitting — *see under* Fruit splitting.

Spongospora subterranea — *see under* Potato Powdery Scab.

Spore-germination test, glass-slide method — *see under* Slide-germination.

Spray (ing)–

chemical investigations — recent work on, **1938,** IV, 258.

compatibility — *see also under* Lead arsenate; Lime-sulphur.
notes on, **1938,** IV, 258.

concentrate — *see under* Spraying, low volume.

culture — *see also under* Water culture.
of apple rooted shoots, **1951,** II, 38; **1952,** II, 32. **A method of growing trees with their roots in a nutrient mist,** by M. C. Vyvyan and G. F. Trowell, **1952,** III, 95.

damage — *see also under* Apple Scab; Spraying, general; Spraying, low volume.
notes on, **1939,** II, 36; **1940,** II, 27; **1941,** II, 25; **1942,** II, 26; **1943,** II, 27; **1949,** II, 47; **1950,** II, 32, 47; **1951,** II, 46, 48; **1952,**

II, 42, 44; **1953,** II, 46. Testing of lime-sulphur spray damage on gooseberries, **1913-14,** 2. Trials with lime-sulphur and Bordeaux mixture, **1927,** II, 55; **1928,** II, 100; **1929,** II, 70. Action of sulphur on Leveller gooseberries, **1929,** II, 64. Cox is copper and sulphur shy, **1932,** II, 29. Spray damage by tar-petroleum mixture against Apple Capsid, **1932,** III, 132. Zinc sulphate in lime-sulphur proved unsatisfactory alternative to ferrous sulphate, **1935,** II, 67. Phytocidal properties of certain new chemical preparations, **1935,** III, 198; **1936,** III, 259 (for further details *see under* Spraying, general). Inclusion of ferrous sulphate has a beneficial effect in protecting trees from defoliation by lime-sulphur applied at 1–60 post-blossom with or without lead or calcium arsenate, **1936,** II, 73. Control of Apple Scab by 1% lime-sulphur not improved by addition of spreader; spray without spreader caused more injury e.g. leaf-burn, defoliation, and fruit drop than with spreader; inclusion of ferrous sulphate in 1% lime-sulphur reduced amount of foliage injury on Cox; addition of cotton seed oil at 0·75% to weak Bordeaux mixture prevented foliage damage, but increased severe fruit russet; scab control was also improved, **1937,** II, 84. Phytocidal properties of certain sprays used against Apple Scab, **1937,** III, 229 (for further details *see under* Spraying, general). In lime-sulphur–lead arsenate mixtures the amount of soluble arsenic liberated from given amount of lead arsenate decreased as concentrations of lime-sulphur were increased between 0·5% and 2%, **1938,** II, 83; **1939,** II, 32. Inclusion of cotton seed oil in Bordeaux mixture prevented foliage injury on Worcester Pearmain and slightly increased very mild fruit russeting; damage also controlled by reduction in spray concentration, **1938,** II, 84. When mixed with lime-sulphur calcium arsenate caused more damage to the trees than did lead arsenate; addition of ferrous sulphate to either mixture reduced leaf drop, but not fruit drop, **1939,** II, 32. Much winter petroleum damage is due at least as much to spraying in windy weather as to spraying during an unsafe period; rate of application was more important than choice of date, two sprayings of 5% oil giving consistently more damage than one; on apples a calcium arsenate preparation caused more damage than a lead arsenate preparation when used alone, or mixed with lime-sulphur or with a wettable sulphur, **1940,** II, 27. **Spray damage and Apple Capsid control by winter petroleum,** by W. Steer and M. H. Moore: spraying trials to determine influence of period of spraying on spray damage and on the degree of control of Apple Capsid; on plums rate of application was more important as a factor in spray damage than the period at which the spray was applied; on apples results similar, but less pronounced, **1940,** III, 76. With winter petroleum unduly heavy oil deposit is more important than the period of application as a factor in spray damage; some reduction of fruit set in Worcester Pearmain was recorded following an application to individual, fully-open flowers of 1% lime-sulphur, **1941,** II, 25. Amount of soluble arsenic liberated from mixtures of lime-sulphur with 0·2% lead arsenate powder reached a maximum when concentration of lime-sulphur was approximately 0·3%; severe damage followed application of 0·2% lead arsenate with 0·25% lime-sulphur when applied in mid-June, **1942,** II, 26. Lead arsenate unaffected by carbon dioxide, but calcium arsenate reacted slowly and much of the arsenic passed into solution, **1943,** II, 27. Petroleum spray damage on renewal and established-spur pruned apple trees, **1946,** III, 50. Leaf drop due to parathion damage increased by lime-sulphur and reduced by NAA, **1949,**

Spray (ing)–damage–*continued*

II, 34. Experimental application of finely air-divided undiluted lime-sulphur to Cox showed that there are clearly defined dosage limits, which, if exceeded, may cause severe damage to foliage, **1949,** II, 41. Spray damage trials, **1949,** II, 47. Damage caused by various inorganic and organic fungicides, **1950,** II, 47. **The influence of rootstock on spray damage in apple,** by A. P. Preston, M. H. Moore, and Margery Bennett, **1950,** III, 132. Problems of assessing damage objectively, **1951,** II, 46. **A method of estimating scorch on leaves,** by F. W. M. Llewelyn and M. Allen: scorch induced artificially by ammonium thiocyanate spray; method involved measurement of fresh weight and oven dry weight of treated leaves and suitable control, **1951,** III, 115. **The effect of wetter concentration on ammonium thiocyanate damage to raspberry leaves, and on the volume of spray required to achieve complete wetting,** by F. W. M. Llewelyn and M. Allen: volume of spray per unit dry weight of leaf needed to cause complete wetting of leaf *decreased* with increasing wetter concentration, but proportion of leaflets damaged was unaffected, **1951,** III, 119. **Spray damage investigations in 1949-51,** by A. H. M. Kirby and Margery Bennett: trials on apples and pears, action of HETP on gooseberries, toxaphene on plums, and Bordeaux-wetter damage on apples, **1951,** III, 183. **An effect of phenyl mercury chloride on pear leaves,** by A. H. M. Kirby and Margery Bennett, **1951,** III, 187. Spray damage depended on nature of poison and wetter used rather than the efficiency of wetting; damage by low volume spraying, **1952,** II, 30. New phytotoxicity plots planted up and apples, pears, gooseberries, and black currants available for tests, **1952,** II, 44. Amount of copper sulphate entering leaf and causing damage negligible compared with large quantity absorbed on surface; damage at distance from site of application may result from formation of toxin under influence of copper rather than by movement of copper itself within tissues, **1953,** II, 33. Rate of penetration of metallic salts varied with nature of both anion and cation, but not with temperature over range 25–30° C.; lower epidermis proved more permeable than the upper by a factor of at least 10, **1953,** II, 46.

defoliating — for use in controlling biennial bearing of apples—*see under* Biennial bearing.

general — *see also under* Acaricides; Fungicides; Insect attacks; Insect control; Insect fauna; Insecticides; Ovicides; Winter washes. *Also under* specific pests and diseases for control of such pests and diseases.
notes on, **1937,** II, 49; **1938,** II, 48. **The relative value of tar-distillate washes, spring washes and grease-banding in any scheme of insect control,** by A. M. Massee, **1930,** IV, 111. **Some incidental effects of routine scab-sprays, with special reference to Apple Fruit Sawfly-control—a sidelight on the interpretation of field spraying experiments,** by M. H. Moore: routine fungicidal applications designed to control Apple Scab were advantageous also in control of Apple Fruit Sawfly and Brown Rot of fruits, Fruit Tree Red Spider, and Apple Mildew, and, where lead arsenate was included, of various leaf-eating caterpillars, **1932,** III, 90. Pomological aspects of, **1933,** II, 36; **1934,** II, 41. **A field spraying trial of combined fungicide-contact insecticide sprays in 1933: a progress report,** by M. H. Moore, **1933,** III, 156. **A field spraying trial of combined fungicide-contact-insecticide sprays in 1934: a progress report,** by M. H. Moore and H. B. S. Montgomery: gives effect of spray on different insects and fungal disease, **1934,** III, 208.

A field spraying trial of combined fungicide-contact-insecticide sprays in 1935: a progress report, by M. H. Moore and H. B. S. Montgomery, **1935,** III, 191. **Field trials in 1935 of the fungicidal and phytocidal properties of certain new chemical preparations: a progress report,** by H. B. S. Montgomery, M. H. Moore, and H. Shaw: of preparations showing promise in 1934, none proved as effective as Bordeaux mixture or lime-sulphur against scab, **1935,** III, 198. **Field trials in 1936 of the fungicidal and phytocidal properties of certain new chemical preparations: a progress report. I. Fungicidal properties,** by M. H. Moore and H. B. S. Montgomery. **II. Preliminary phytocide tests,** by H. Shaw: every form of copper applied to Cox caused more or less severe damage in all concentrations down to 0·1% copper, in one case down to 0·025% copper; 1936 was a season notable for severity of copper damage, **1936,** III, 259. **A field spraying trial of combined fungicide-insecticide sprays in 1936: a progress report,** by M. H. Moore and H. B. S. Montgomery: good control of Apple Scab given by application of lime-sulphur at green bud, pink bud, petal-fall, and three weeks after petal-fall; addition of nicotine to petal-fall spray controlled Apple Sawfly satisfactorily; inconclusive results obtained by adding lead arsenate, to control Codling Moth, to second post-blossom spray, **1936,** III, 267. **Field trials in 1937 of the fungicidal and phytocidal properties of certain sprays used against Apple Scab: a progress report,** by M. H. Moore: fungicidal and phytocidal properties of weak sprays containing sulphur or copper described, **1937,** III, 229. **Spraying in the fruit garden,** by A. M. Massee, **1948,** IV, 148. **Some thoughts on progress in fruit-spraying methods,** by M. H. Moore, **1948,** IV, 153.

low volume — **An experiment in applying undiluted lime-sulphur to apple trees,** by M. H. Moore: experiment in spraying and atomization of undiluted lime-sulphur in mid-summer on dwarf pyramid apple trees of five different varieties; appreciable damage resulted from spray, but not from atomized lime-sulphur, **1947,** III, 129. Use of atomized lime-sulphur concentrate at low volume dosage on cropping Cox was highly satisfactory, **1950,** II, 40. Determining relation between dosage and concentration in low volume spraying with atomized concentrated lime-sulphur, **1951,** II, 42. Damage by, **1952,** II, 30. Investigations continued on low volume spraying on apple rootstock hedges, dwarf bush trees, and on established plantation trees, **1952,** II, 37. **Concentrate spraying in fruit plantations: a review of experiments with lime-sulphur,** by M. H. Moore, **1952,** III, 132. Lime-sulphur applied at very low volume effective and safe provided high concentration of lime-sulphur used, **1953,** II, 41. **Is concentrate spraying with lime-sulphur a practical proposition?,** by M. H. Moore, **1953,** IV, 210.

pre-harvest — *see under* Fruit drop.

programme — routine on Experimental Farm, **1930,** I, 33; **1931,** I, 19; **1932,** I, 12; **1933,** I, 21; **1934,** I, 26; **1935,** I, 22; **1936,** I, 23; **1937,** I, 30; **1938,** I, 30; **1939,** I, 17; **1940,** I, 14; **1941,** I, 12; **1942,** I, 13; **1943,** I, 14; **1944,** I, 15; **1945,** I, 15; **1946,** I, 13; **1947,** I, 17; **1948,** I, 19; **1949,** I, 17; **1950,** I, 18; **1951,** I, 19; **1952,** I, 17; **1953,** I, 19. **The East Malling spray calendar, 1942 edition,** by M. H. Moore and W. Steer, **1941,** IV, 68. Amendments to 1942 edition, **1943,** IV, 114.

residues — determination of arsenic on fruit to which lead arsenate applied to control Codling, **1936,** II, 71. **Spray residue investigations. I. Determination of arsenic on pears and apples and of copper on loganberries,** by H. Shaw: hard fruits may be safely sprayed with

Spray (ing)–residues–*continued*

normal amounts of lead arsenate up to six weeks before picking, while copper sprays on loganberries as late as fifteen days before picking are safe, **1936,** III, 240. **Spray residue investigations. II. The influence of spray supplements on the retention of lead arsenate on apples,** by H. Shaw and W. Steer: amount of arsenical residue retained by the fruits was increased by a refined petroleum oil, but not significantly affected by lime-sulphur, by lethalate, or by lime-sulphur and lethalate, **1937,** III, 219. **Spray residue investigations. III. The influence of petroleum oil and of lime-sulphur on the retention of lead arsenate on apples,** by H. Shaw and W. Steer: oil appeared to increase the arsenical residue except perhaps where used with lime-sulphur; lime-sulphur had by itself no effect; fruit growth was checked whenever lime-sulphur, with or without oil, was used, **1938,** III, 199. Recent work on, **1938,** IV, 259. **Spray residues on fruit,** by H. Shaw, **1938,** IV, 262. Mercury residues, unexplained losses, **1952,** II, 43. **A rapid method of measuring copper deposits on large numbers of individual leaves,** by M. Allen and F. W. M. Llewelyn: using bis*cyclo*hexanone oxalyldihydrazone as colour-developing reagent, **1953,** III, 180. **The estimation of lime-sulphur deposited on leaves,** by M. Allen and F. W. M. Llewelyn: based on determination of calcium content of the lime-sulphur by titration with the disodium salt of ethylenediamine tetra-acetic acid, **1953,** III, 182.

Spreaders — *see under* Wetting agents.

Spring Usher Moth — observations on, **1945,** III, 93.

Spumaria alba — slime fungus investing clumps of grass, **1934,** III, 147.

Spur Blight, raspberries — notes on, **1926,** II, 58; **1927,** II, 54; **1926-27** (S), III, 128; **1930,** IV, 95; **1928-29-30** (S), III, 133; **1931,** III, 49; **1932,** III, 84; **1933,** III, 145; **1935,** IV, 235; **1936,** III, 191; **1937,** III, 185; **1947,** II, 51; **1948,** II, 39. Reader's Perfection particularly susceptible, **1926-27** (S), III, 117. Spraying experiments for control of, **1947,** II, 51. Use of arsenical eradicant sprays and Bordeaux mixture, **1948,** II, 52.

SR 406 — *see under* Apple Scab.

Stag Beetle — occurrence in roots and stems of cherry trees, **1935,** III, 168.

Stalk-End Rot, apples — notes on, **1941,** III, 40.

Starch, occurrence of — *see under* Histological investigations.

Statistical studies — (including methods and technique of experimental design, variation, sampling, and recording).
see also under Statistics and Records Section.
Black currant variety trials: reliability of results. The variability in cropping of individual black currant bushes as a guide to the suitable size of experimental plots, by R. G. Hatton, N. H. Grubb, and R. C. Knight, **1924,** III, 54. Estimating size and colour in apples, **1925** (S), III, 16. **The relationship between the experimental and the demonstration plot and their relative value to the investigator, the county officer and the fruit grower,** by T. N. Hoblyn, **1929,** IV, 40. **The elimination of sources of error in field experiments. The standardization of fruit tree stocks,** by R. G. Hatton: that a single variety of apple responds quite differently in the early years to fertilizer dressings when grafted upon different known rootstocks has been conclusively proved; gives general discussion of standardization of rootstocks, **1928-29-30** (S), III, 13. **An experiment in sampling technique for size and colour of apples; Bramley's**

Statistical studies–*continued*

Seedling on rootstock No. II, 1934 crop, by J. L. Edgar and A. F. de Wet: 'sample' boxes taken from total crop for each tree were found sufficiently uniform to take one as representative of crop of whole tree, **1934,** III, 130. **Experiments in sampling technique. II. Size and colour of Allington Pippin, 1936 crop,** by T. N. Hoblyn and J. L. Edgar: with normal replication of such trees it is only necessary to grade about one-eighth of crop of each tree, selected at random from the whole, to obtain reasonably accurate estimates of average size and colour 'figures', **1937,** III, 168. **An investigation into means of reducing the labour needed for recording crops,** by S. C. Pearce, **1942,** III, 36. **The measurement of fruit crops by sampling,** by S. C. Pearce, **1946,** III, 77. **A review of experimental design at East Malling, 1919-1947,** by S. C. Pearce and T. N. Hoblyn: trials considered—apple rootstock trial, 1919; apple manurial trial, 1930; black currant variety and pruning trial, 1932; apple cordon trial, 1934; Phenomenal Berry and loganberry trial, 1934; cover crop trial, 1940; apple rootstock trial, 1945; blank trial for future experiments, 1945; propagation trial, 1946; Red Spider spraying trial, 1947, **1947,** III, 88. **The purpose and design of calibration trials,** by S. C. Pearce and J. Taylor, **1949,** III, 83. **The estimation of fruit size of cherries by sampling methods,** by J. Taylor, **1950,** III, 93. **Statistical studies on strawberry crop and vigour measurements,** by J. Taylor, **1950,** III, 100. Eye estimates of crop weights, **1951,** II, 33; **1952,** II, 28. **Studies in the measurement of apple trees. I. The use of trunk girths to estimate tree size,** by S. C. Pearce, **1951,** III, 101. **The design of calibration trials with three varieties,** by S. C. Pearce, **1951,** III, 105. Use of probit analysis, **1952,** II, 28. **A review of experimental design at East Malling, 1948-1952,** by S. C. Pearce, G. M. Jolly, and G. H. Freeman: review of field trials recently designed at East Malling with statistical comments, **1952,** III, 83. **The natural spread of Nettlehead disease of hops,** by J. T. Legg: special methods of analysis used in, **1952,** III, 123. **Studies in the measurement of apple trees. II. The height at which trunk girths should be measured,** by S. C. Pearce and G. E. Davies: recommended that girths should ordinarily be measured 12 inches above graft union, with additional higher girths near the crotch in the case of rootstock trials, **1953,** III, 138.

Statistics and Records Section — general review of research work, **1928,** II, 40; **1929,** II, 38; **1930,** II, 46; **1931,** II, 31; **1932,** II, 35; **1933,** II, 42; **1934,** II, 52; **1935,** II, 50; **1936,** II, 56; **1937,** II, 65; **1938,** II, 64; **1939,** II, 24; **1940,** II, 20; **1941,** II, 18; **1942,** II, 19; **1943,** II, 20; **1944,** II, 22; **1945,** II, 25; **1946,** II, 26; **1947,** II, 30; **1948,** II, 33; **1949,** II, 31; **1950,** II, 28; **1951,** II, 32; **1952,** II, 27; **1953,** II, 30.

Stauropus fagi — *see under* Lobster Moth.

Stem-building — *see under* Apples, stem-building; Bacterial Canker, cherries; Bacterial Canker, plums; Cherries, stem-building; Double-working; Pears, stem-building; Plums, stem-building.

Stem and Bulb Eelworm — observations on, **1949,** II, 44; **1950,** II, 43; **1951,** II, 44; **1952,** II, 40, IV, 177; **1953,** II, 44.

,, cuttings — *see under* Propagation, cuttings, stem.

,, Eelworm — *see under* Stem and Bulb Eelworm.

Stenopsocus stigmaticus — *see under* Booklouse.

Stephanitis rhododendri — *see under* Rhododendron Bug.

Stereum purpureum — *see under* Papery Bark Canker; Silver Leaf.

Sterilization of eelworm larvae — use of sodium hypochlorite, **1952,** III, 138.

Stethorus punctillum — *see under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite *and* general.

Stock/scion relationship — *see under* Rootstocks, rootstock and scion, growth relations, analysis of; Rootstocks, rootstock and scion, mutual influence of, including incompatibility.

Stockton Morello — *see under* Cherries, Stockton Morello.

Stone-fruit viruses — *see also under* individual stone fruits.
technique for indexing, **1951,** II, 41.

Stony Pit, pears — notes on, **1950,** II, 39; **1952,** III, 179. No indication of transmission by grafting, **1947,** II, 38.

Stoolbeds — *see under* Nurseries and stoolbeds, Experimental Farm; Nursery work; Propagation, layering; Rootstocks.

Storage– — *see also under* Farm, Experimental, reports (for commercial storing of fruit from Experimental Farm).

apples — *see also under* Apples, keeping quality; Apple Scab; Blue Mould; Functional disorders; *Gloeosporium album*; Pink Rot.
notes on, **1928-29-30** (S), III, 123; **1937,** I, 24, 25, 27; **1938,** I, 28; **1951,** I, 19; **1952,** I, 17. Effect of gas mixtures on Fruit Tree Tortrix Moth, *C. oporana*, feeding on apples in gas store, **1933,** III, 231. **Some notes on one year's experience with a gas store,** by A. C. Painter, **1935,** IV, 213. Wrapping experiment, **1937,** I, 27. Notes on Scald, **1940,** III, 56. Experiment to test effect of 'Ditton Apple Dip' on storage quality on a commercial scale, **1941,** II, 16, 26. Damage by Ground beetles, **1944,** III, 79; **1953,** III, 162. Effect on storage of Cox of NAA spray and delay in picking, **1948,** III, 86.

Botrytis sp. — a rot of stored fruits, **1949,** IV, 172.

general — control of storage quality by plant injection, **1935,** II, 56. Investigations in collaboration with Ditton Laboratory, **1953,** II, 50.

pears — *see also under Gloeosporium album*; Pink Rot.
influence of maturity on storage life of Conference pear, **1932,** III, 51. Influence of irrigation on storage life of Conference pear, **1940,** III, 40.

plums — *see also under* Brown Rot, plums.
notes on, **1937,** I, 25; **1939,** IV, 82. **Notes on one season's experience with cold storing plums,** by A. C. Painter: maturity at picking time had a considerable influence on storage life of fruit; fruit picked when firm and beginning to colour kept better than fruit picked when more mature, **1936,** IV, 288.

walnuts — *see under* Walnuts, storage (including curing).

Strawberry (ies)–

Anthonomus — *see under* Strawberry Blossom Weevil.

Aphid — *see also under* Crinkle, strawberries; Strawberries, burning over; Yellow-edge, strawberries.
observations on, **1938,** II, 96, IV, 230; **1939,** III, 72; **1953,** II, 44. Proved conclusively to be vector of Yellow-edge, **1934,** II, 70. **Notes on the Strawberry Aphis (*Capitophorus fragariae* Theo.),** by A. M. Massee: not found on other than cultivated strawberry under natural conditions, **1934,** III, 173. Experiments indicate that Strawberry Aphid can transmit Yellow-edge during seven months of the year, **1936,** II, 83. Is vector of Yellow-edge and can transmit the disease during months from February to October inclusive; search made for alternative hosts; no substitute found for nicotine and soft soap as control, **1937,** II, 98. **Notes on the Strawberry Aphid (*Capitophorus fragariae* Theob.),** by A. M. Massee, R. M.

Strawberry (ies)–Aphid–*continued*

Greenslade, and A. J. Duarte: aphid can live all year round on strawberry but under certain conditions will breed quite readily on Silverweed; two winged periods noted in 1937, one in latter part of May, second at end of September; apterous viviparous females migrate readily in addition to winged forms, **1937,** III, 209. **The control of Strawberry Aphis and Tarsonemid Mite,** by R. M. Greenslade and A. M. Massee: nicotine and soft soap spraying best control for Strawberry Aphid; treatment of strawberry runners before planting only control for Tarsonemid Mite, **1938,** III, 186. **Suggestions for control of Strawberry Aphis,** by R. M. Greenslade and A. M. Massee: consists of (1) warm water treatment or dipping of runners, (2) spraying of runner beds with nicotine and soft soap just before and after the migration of the aphid, (3) similar treatment of fruiting plantations in certain circumstances, (4) burning of straw litter after picking fruit, **1938,** IV, 250. Vector of both Yellow-edge and Crinkle, transmitting any time from beginning of March to end of November; apterous viviparous females, the winged forms, and first and second winter nymphs all capable of transmitting disease, **1939,** II, 31. **Dipping of strawberry runners before planting,** by A. M. Massee and R. M. Greenslade: in a dip of nicotine and soap, no permanent injury resulted from concentration up to 0·8% soap, double what is normally recommended, **1939,** III, 73. Absence of in 1940, **1940,** III, 63. **Strawberry Aphis and the weather in 1940,** by R. M. Greenslade: effects of aphid control by vaporized nicotine persisted for a year, even with full opportunity for reinfestation, **1940,** III, 65. **Work at East Malling on the control of the Strawberry Aphis,** by A. M. Massee and R. M. Greenslade: successful control of Strawberry Aphid by the use of vaporized nicotine is discussed, **1940,** IV, 92. Alate viviparous female stage of Strawberry Aphid is vector of strawberry crinkle virus, **1941,** II, 23. Satisfactory method of vaporizing aphid-infected strawberry runners before planting, with nicotine, has been worked out, **1942,** II, 25. Late application of nicotine vapour gave a commercially useful control of aphids on runners after lifting, **1943,** II, 26. Predators of, **1944,** II, 28. Correlation between maximum infestation and fruit development; undetermined species of *Aphidius* was found parasitizing *C. fragariae* at Evesham and is thus the first recorded parasite; control by nicotine vapour for forty-five seconds at $3\frac{3}{4}$–4 lb. pure nicotine per acre, **1945,** II, 37. Control by insecticidal smokes, **1947,** II, 40. Trial of parathion insecticide, **1949,** II, 44. **The Strawberry Aphid, *Pentatrichopus fragaefolii* (Cock.), and its control,** by G. H. L. Dicker, **1949,** III, 132. Good control of Strawberry Aphid in field trials again obtained by applying parathion pre-blossom to fruiting plants and schradan in early July to maiden beds intended either for fruiting or for runners, **1950,** II, 43. **Studies in population fluctuations of the Strawberry Aphid, *Pentatrichopus fragaefolii* (Cock.). I. Enemies of the Strawberry Aphid,** by G. H. L. Dicker, **1951,** III, 166. Negative results from attempts to transmit Green Petal disease, **1952,** II, 36. Field trials carried out to (*a*) compare the effect on control in runner beds of sprays containing different concentrations of schradan, (*b*) evaluate the control in fruiting beds of tar oil applied during the dormant period and schradan applied pre-blossom, (*c*) study of the incidence of virus following various spray treatments, **1952,** II, 40.

aphids

see also under Shallot Aphid; Strawberry Aphid; Strawberries, burning over.

notes on, **1945,** II, 37. **Notes on the Strawberry Aphis (*Capitophorus*

Strawberry (ies)–aphids–*continued*

fragariae Theo.), by A. M. Massee, with Appendix—**Bibliography of papers dealing with aphids on strawberries,** by F. J. D. Thomas, **1934,** III, 173. Nicotine dip for strawberry runners, **1938,** IV, 250; **1939,** III, 73.

Armillaria Root Rot — *see under* Armillaria Root Rot.

beetles — *see under* Strawberry Ground beetles; Strawberry Seed Beetle.

Black Root Rot — *see under* Black Root Rot, strawberries.

blossoming — *see under* Blossoming, general.

Blossom Weevil — observations on, **1928-29-30** (S), III, 196. 5% dusts of DDT and BHC gave promising control, **1945,** II, 37. Use of DDT against, **1947,** II, 40; **1950,** I, 18; **1953,** III, 162. Perle de Prague sometimes severely attacked; routine DDT advised, **1952,** IV, 177.

Botrytis — *see under* Grey Mould.

Brassy Tooth-legged Flea Beetle — *see under* Strawberries, Mangold Flea Beetle.

breeding — *see under* Breeding, soft fruits, strawberries.

bud sport — **A bud-sport in Royal Sovereign strawberry,** by W. S. Rogers, **1949,** III, 61.

burning over — *see also under* Strawberry growing, general.
notes on, **1937,** II, 96; **1938,** IV, 226, 232, 250; **1949,** II, 28; **1951,** II, 30; **1952,** II, 25. Such pests as various strawberry aphids, leafhoppers, Whitefly, and Red Spider Mite completely controlled by burning immediately after crop, but not Tarsonemid Mite; 'burnt' plants slightly smaller than unburnt ones but yielded twice the crop, **1935,** II, 75. Larger crop on plots where burnt over after fruiting, in the previous year, than on those not burnt over, although plant size was slightly reduced, **1938,** II, 94. Trial of burning of straw litter gave a *smaller* crop where the straw was burnt than when it was not—contrary to previous results, **1941,** II, 17. Latest trial of burning straw litter after fruiting once more showed a heavier crop on those plots where burning done, **1942,** II, 16. Experiments in burning over and mowing, **1953,** IV, 221.

Cambridge 'X' virus — notes on, **1952,** II, 37; **1953,** II, 40.

Cauliflower Disease — *see under* Cauliflower Disease, strawberries.

certification schemes — *see under* Propagation, strawberries.

Crinkle — *see under* Crinkle, strawberries.

,, ', 'False — prevalent on leaves of Royal Sovereign plants; might be primarily the result of nutritional deficiencies promoted by delay in spring production of new root fibre, **1939,** III, 59.

cropping — *see under* Statistical studies; Strawberries, Experimental Farm.

deblossoming — *see under* Strawberry growing, general.

Eelworm(s) — *see under* Leaf and Bud eelworms; Meadow Nematode; Root Lesion Nematodes; Stem and Bulb Eelworm.

Experimental Farm — acreage, cropping, and general notes, **1929,** I, 25; **1930,** I, 32; **1931,** I, 12; **1932,** I, 13; **1933,** I, 15; **1934,** I, 20; **1935,** I, 18; **1936,** I, 16; **1937,** I, 18; **1938,** I, 22; **1939,** I, 15; **1940,** I, 12; **1941,** I, 11; **1942,** I, 11; **1945,** I, 12; **1946,** I, 12; **1947,** I, 16; **1948,** I, 18; **1949,** I, 17; **1950,** I, 16; **1951,** I, 18; **1952,** I, 15, 16; **1953,** I, 18.

'False Crinkle' — *see under* Strawberries, Crinkle', 'False.

Fragaria chiloensis — notes on, **1940,** II, 17. Acts as a symptomless carrier of Yellow-edge with high resistance, **1936,** II, 82.

Strawberry (ies)–*continued*

Fragaria vesca — use as virus indicator plant, **1936,** II, 82; **1937,** II, 97; **1938,** II, 95, IV, 229; **1939,** II, 29; **1946,** II, 36; **1951,** I, 23, III, 137; **1952,** II, 37, III, 128.

„ *virginiana* — notes on, **1940,** II, 17. Highly susceptible to Yellow-edge with continuous symptom expression, **1936,** II, 82.

frost damage investigations — *see under* Frost damage investigations, strawberries.

Fruit Weevil — observations on, **1948,** II, 29.

Green Petal Disease — *see under* Green Petal Disease.

Grey Mould — *see under* Grey Mould.

Ground beetles — observations on, **1943,** III, 61. Observations on; DDT unsuccessful, trapping tried, **1952,** II, 41; **1953,** II, 45.

growing, general — *see also under* Irrigation, strawberries; Manuring, strawberries; Propagation, strawberries; Strawberries, burning over; Strawberries, spacing.
notes on, **1929,** II, 37; **1930,** II, 45; **1931,** II, 29; **1932,** II, 33; **1933,** II, 39; **1938,** II, 94; **1948,** II, 30. Notes on general cultivation, **1928,** II, 39. Plant as early in autumn as moisture conditions of ground allow; deblossoming of plants greatly increases runner production and slightly increases size of the deblossomed plant, **1930,** II, 45. **Strawberries at East Malling. Experiments in strain, time of planting, and de-blossoming,** by W. S. Rogers: selection of parent plants and runners has considerably reduced variation between three strains; early autumn planting has given best results in cropping, vigour, and runner production; deblossoming has increased diameter of plant by 6% and amount of runners produced by 32%, **1930,** IV, 61. **Strawberry cultivation: strain, time of planting and de-blossoming,** by W. S. Rogers; extended account of above, **1928-29-30 (S),** III, 52. **Present day strawberry problems at East Malling,** by R. V. Harris, A. M. Massee, W. S. Rogers, and Isabella Lauder-Thomson, **1934,** IV, 229. **Results of researches in strawberry growing,** by W. S. Rogers, Mary E. King, and A. M. Massee: propagation and cultural problems, virus diseases, and some important pests of strawberry, **1938,** IV, 223. Strawberries deblossomed in their first year cropped more heavily than those allowed to fruit in their first year; plants from one-year-old parents cropped more heavily than those from two-year-old plants, **1940,** II, 17. **Strawberries: making the most of a limited acreage,** by W. S. Rogers, **1941,** IV, 56. **Progress in strawberry culture,** by W. S. Rogers, **1946,** IV, 149. **Strawberry cultivation,** by W. S. Rogers, **1949,** IV, 163. **Cultural experiments with strawberries,** by Dorothy J. Wilson: describes spaced and matted planting systems, irrigation, and burning and mowing strawberry fields after cropping, **1953,** IV, 220.

heat treatment against virus diseases — *see under* Virus diseases, heat treatment, strawberries.

irrigation — *see under* Irrigation, strawberries

Leaf Blotch — notes on, **1941,** III, 42; **1944,** II, 27. **Strawberry Leaf Blotch,** by H. Wormald and H. B. S. Montgomery: first reported in England in 1941, **1941,** III, 44. **Strawberry Leaf Blotch fungus,** by H. Wormald, **1944,** III, 76.

„ Burn — *see under* Leaf Burn, strawberries.

Leafhopper — *see under* Rose Leafhopper.

Leaf Scorch — *see under* Leaf Scorch, strawberries.

„ Spot — *see under* Leaf Spot, strawberries.

Strawberry (ies)–*continued*

Mangold Flea Beetle — on leaves of strawberry, **1937,** III, 204.

manuring — *see under* Manuring, strawberries.

Mild Crinkle — *see under* Crinkle, strawberries.

Mildew — notes on, **1936,** III, 190; **1938,** III, 169. Lime-sulphur compared with sulphur dust; disease checked more by wet sprays than by dust, **1935,** II, 69. **Notes on the control of Strawberry Mildew (*Sphaerotheca humuli*),** by M. H. Moore: lime-sulphur and sulphur dust controlled mildew, but dust requires more frequent application than spray; treatment to begin during latter half of April, **1936,** III, 276. Recent work on, **1938,** IV, 253. Madame Lefebvre M.49 and Royal Sovereign very susceptible, **1952,** IV, 176.

Mite — *see also under* Strawberries, burning over; Strawberries, warm water treatment.
observations on, **1928-29-30** (S), III, 190; **1930,** II, 103; **1931,** II, 42; **1932,** II, 45; **1933,** III, 177; **1934,** III, 167; **1938,** II, 96, IV, 231; **1939,** III, 71; **1943,** III, 64; **1946,** II, 22; **1947,** II, 27, 40. **The Tarsonemid Mite of strawberry,** by A. M. Massee: description of attack on strawberries, **1928-29-30** (S), III, 206. **The Strawberry Tarsonemus,** by A. M. Massee: first noticed in 1924; checked by dipping runners in lime-sulphur at time of planting, **1930,** IV, 109. **Further observations on the Strawberry Tarsonemid Mite (*Tarsonemus fragariae* Zimm.),** by A. M. Massee: life history and various control measures without success; preliminary trials in hot water before planting described, **1932,** III, 117. **Investigations on the control of the Strawberry Tarsonemid Mite,** by A. M. Massee: plants should be treated in water at 110° F. for twenty minutes, **1933,** III, 181. Not vector of Yellow-edge, **1934,** II, 70. Immerse in warm water at 110° F. for twenty minutes, then cool off as soon as possible, **1934,** III, 167. Healthy plants may become infested from mite-infested plants if they are adjacent to them or at a distance of less than thirty yards, **1935,** II, 77. Confirmed that European Tarsonemid Mite of strawberry is identical with American Cyclamen or Pallid Mite, **1936,** II, 69. Early autumn is most satisfactory planting time; good up to mid-November in some years, but planting in December or January after warm water treatment very risky, **1937,** II, 96. Determination of value of a poison gas for fumigating mite-infested plants prior to planting out, **1937,** II, 98. **The control of Strawberry Aphis and Tarsonemid Mite,** by R. M. Greenslade and A. M. Massee, **1938,** III, 186. Warm water treatment of Royal Sovereign runners for elimination of Tarsonemid Mite does not modify intensity of reaction to Yellow-edge virus, **1940,** II, 24. Fumigation with methyl bromide as alternative to warm water treatment, **1941,** II, 23. Dose of methyl bromide required to kill the mites or their eggs is injurious to the plants; phytocidal action on strawberries noted, **1943,** II, 26. DDT and BHC have no toxic effects on mite, so warm water treatment prior to planting recommended, **1945,** III, 95. Excellent results with methyl bromide, **1948,** II, 43.

Moth — *see under* Strawberry Tortrix Moth.

mowing — *see under* Strawberries, burning over.

mycorrhiza — *see under* Mycorrhiza, strawberries.

Nuclear Stock Propagation Scheme — *see under* Propagation, strawberries.

planting — *see under* Strawberry growing, general; Strawberry Mite; Strawberries, warm water treatment.

Strawberry (ies)–*continued*

propagation — *see under* Propagation, strawberries.

Red Core Disease — *see under* Red Core Disease, strawberries.

,, Plant — *see under* Red Plant, strawberries.

,, Spider — *see under* Red Spider Mite.

Rhynchites — observations on, **1933,** III, 177; **1945,** III, 91; **1946,** II, 39. Controlled by application of derris dust, **1940,** III, 61. One dusting with 3% DDT gave complete freedom from pest for a fortnight, **1945,** II, 37. *Rhynchites minutus* not observed feeding on strawberries, **1945,** III, 91. **The Strawberry Rhynchites and its control,** by G. H. L. Dicker: excellent control by applying 3% DDT dust when first blossom trusses appear, **1946,** IV, 151. Controlled by dressing with 5% DDT applied at 25 lb. per acre, **1949,** III, 126.

Root Rot — *see under* Black Root Rot, strawberries.

,, weevils — observations on, **1938,** III, 180; **1948,** III, 103.

runners, selection of — *see under* Propagation, strawberries; Strawberry growing, general.

Seed Beetle — observations on, **1943,** III, 61.

slime fungus — *see under* Slime fungus.

soil moisture studies — *see under* Soil moisture studies.

spacing — notes on, **1938,** IV, 226; **1946,** II, 22; **1948,** II, 30; **1950,** II, 26; **1953,** II, 27. Trial comparing strawberries growing in spaced rows, matted rows, and matted beds; the matted rows and matted beds gave yields up to 100% greater than the spaced rows with no significant decrease in size or increase in percentage of rotten fruit, **1947,** II, 27. Matted beds gave lowest and spaced rows the highest crop owing to drought, **1949,** II, 28. Large increases of yield obtained by matted rows instead of spaced single rows, **1951,** II, 30. In spacing trial of Climax the wide matted beds again showed that root competition severely limits the crop in a season of drought, **1952,** II, 25. Experiments in spacing, **1953,** IV, 220.

sport — *see under* Strawberries, bud sport.

strain — *see also under* Strawberry growing, general.
notes on, **1929,** II, 37. Difference in strain is mainly a question of vigour of plant depending not on the clone but on environment, **1930,** II, 45.

Tarsonemid Mite — *see under* Strawberry Mite.

time of planting — *see under* Strawberry growing, general; Strawberry Mite; Strawberries, warm water treatment.

Tortrix Moth — *see also under* Tortricid moths (regarding *Argyroploce urticana*).
observations on, **1943,** III, 59; **1953,** III, 164. *Copidosoma tortricia* as parasite on larvae, **1943,** III, 59.

varieties–
collections, trials, and classification — *see also under* Strawberries, *Fragaria chiloensis*; Strawberries, *Fragaria vesca*; Strawberries, *Fragaria virginiana.*
notes on, **1919-20,** 6; **1928,** II, 39; **1929,** II, 37; **1930,** II, 45; **1941,** II, 17; **1942,** II, 16; **1943,** II, 17; **1944,** II, 20; **1945,** II, 20; **1946,** II, 21; **1947,** II, 26; **1948,** II, 29; **1949,** II, 27; **1950,** II, 25; **1951,** II, 29; **1952,** II, 25; **1953,** II, 26. **A comparison of the strawberries Perle de Prague and Madame Lefebvre,** by W. S. Rogers, **1948,** IV, 136. **Notes on some strawberry varieties,** by Dorothy J. Wilson, **1952,** IV, 176.

Verticillium Wilt — *see under* Verticillium Wilt, strawberries.

Strawberry (ies)–*continued*

vigour measurements — *see under* Statistical studies.

Violet Root Rot — observed on, **1931,** III, 50.

virus diseases–general — *see also under* Crinkle, strawberries; Green Petal Disease; Leaf Burn, strawberries; Strawberries, Cambridge 'X' virus; Strawberries, *Fragaria chiloensis*, Strawberries, *Fragaria vesca*; Strawberries, *Fragaria virginiana*; Virus diseases, heat treatment, strawberries; Yellow-edge, strawberries.
notes on, **1934,** II, 63; **1936,** III, 193; **1938,** II, 95, IV, 227; **1941,** II, 17; **1944,** II, 27; **1947,** II, 38; **1948,** II, 40; **1950,** II, 39; **1951,** II, 41; **1952,** II, 36. Neither age of parent nor spacing of the runners is a major factor in the subsequent growth or fruiting of the plant; runners from one-year-old parents tend to be larger than those of two-year-old parents, and spaced runners tend to be larger than unspaced runners, but all appear much alike when established; such differences as were found coincided with differences in incidence of virus infection, **1936,** II, 80. **Virus diseases in relation to strawberry cultivation in Great Britain—a synopsis of recent experiments at East Malling,** by R. V. Harris, **1936,** III, 201. Nutritional studies on strawberry virus diseases, **1938,** II, 95. Yellow-edge and Crinkle under investigation, former being first found on Royal Sovereign in 1932; in 1935-36 *Fragaria vesca* found to be very sensitive to Crinkle and to lesser degree to Yellow-edge; clonal stock of Royal Sovereign found to be free from Yellow-edge, but totally infected with Mild Crinkle; in 1938 numerous samples of Royal Sovereign were procured from a local stock in Western Ireland introduced in 1905 and subsequently cultivated in isolation; most of these shown to be entirely free from both Yellow-edge and Crinkle and can be used for assessment of commercial importance of Mild Crinkle, **1939,** II, 29. **Review of research on strawberry virus diseases, 1932-1939,** by R. V. Harris and Mary E. King: details of research on Yellow-edge and Crinkle and on future programme, **1939,** III, 66. Samples of commercial varieties tested for virus diseases by inarching to *Fragaria vesca*; no virus-free stock of Huxley's Giant found; rapid breakdown of vigorous plants of the virus-resistant ('carrier') variety Huxley's Giant (known to contain yellow-edge and crinkle viruses) was induced in the field by inarching them to Royal Sovereign plants also containing yellow-edge and crinkle viruses; analysis of virus content of infected plants by means of aphid vector (*Capitophorus fragariae*), **1942,** II, 23. **A review of some recent research on virus diseases of raspberry and strawberry in Great Britain,** by R. V. Harris, **1946,** III, 113. Two distinct Yellow-edge diseases demonstrated; severe Crinkle disease caused by combination of at least two viruses, and is distinct from Mild Crinkle which, however, it includes, **1949,** II, 41. **Field studies on virus diseases of strawberries. I. The rate of virus spread in the variety Auchincruive Climax,** by A. F. Posnette and R. Bovey: when plots of Auchincruive Climax were tested six months, one, two, and three years after planting with virus-free stock, samples were found to contain 0, 10, 50, and 100% infected plants respectively, **1951,** III, 136. Notes on natural spread, analytical experiments, and heat therapy, **1953,** II, 40. **Field studies on virus diseases of strawberries. II. Seasonal periods of virus spread,** by A. F. Posnette and R. Cropley: the two main periods for spread are May and June for viruses 1 and 2 (Mild Crinkle and Yellow-edge) and the autumn when mainly virus 2 was spread; little virus spread where plants were guarded from

Strawberry (ies)–virus diseases–general–*continued*

wingless aphids by sticky collars; control of aphids in September would reduce spread of yellow-edge virus, **1953,** III, 154.

vectors — *see under* Rose Leafhopper; Strawberry Aphid; Strawberry Mite; Strawberries, virus diseases, general.

virus indicator plant — *see under* Strawberries, *Fragaria vesca.*

warm water treatment — *see also under* Strawberry Aphid; Strawberry Mite.
notes on, **1935,** II, 75; **1938,** II, 97, IV, 232; **1946,** II, 22. **The warm water treatment of strawberry plants,** by A. M. Massee: general account of research work, **1933,** IV, 256. Notes on time of planting and warm water treatment, **1934,** II, 44. Best time to plant warm water treated runners is early autumn, not in winter as heavy losses will occur; with untreated runners the earlier planting is the best, **1936,** II, 81. Effect of treatment on planting, **1937,** II, 96.

weedkillers — *see under* Weedkillers, strawberries.

Weevil — *see under* Strawberry Root weevils.

Whitefly — *see under* Whiteflies.

Xanthosis — *see under* Yellow-edge, strawberries.

Yellow-edge — *see under* Yellow-edge, strawberries.

Yellows — *see under* Yellow-edge, strawberries.

Straw mulching — *see under* Mulching, straw.

Stunt — *see under* Plum Stunt; Rubus Stunt.

Suckering, cherries — *see under* Pruning, cherries.

Sugars, estimation of — applicable to a single apple leaf, **1952,** II, 31.

Sulphanilamide — used to suppress growth of contaminants in work on abscission, **1950,** II, 31.

Sulphite lye — Use in trials against Raspberry Beetle on loganberries, **1934,** III, 191. Use with petroleum oil in toxicity trials against Winter Moth and *Aphis pomi,* **1942,** II, 25. Experiments with phenyl mercury chloride against Apple Scab, **1946,** II, 42; **1947,** II, 44.

Sulphur–

colloidal — *see also under* Apple Scab; Pear Scab; Spray damage.
notes on, **1952,** III, 132.

dispersible — *see also under* Apple Scab; Pear Scab; Spray damage.
notes on, **1949,** I, 18; **1952,** I, 18. Use with NAA spray, **1947,** III, 101.

general — *see under* Apple Scab; Spray damage; Strawberry Mildew.

insecticidal and fungicidal action of — relatively resistant Greenhouse Red Spider has been killed on Leveller gooseberries (perhaps the most sensitive variety to sulphur injury) without causing leaf drop, **1929,** II, 64.

lime- — *see under* Lime-sulphur.

polysulphide — *see under* Apple Scab.

Summer Fruit Tortricid — notes on, **1951,** II, 44; **1952,** II, 40. **A preliminary account of the Summer Fruit Tortricid, *Adoxophyes orana* (F.R.), in Great Britain,** by Joan R. Groves, **1951,** III, 152. Comparisons made of effectiveness of various applications of DNC and/or DDT against the first generation, and of parathion, with and without DDT, and toxaphene against the second generation, **1952,** II, 43. **Preliminary trials for the chemical control of the Summer Fruit Tortricid,** by Joan R. Groves and R. P. Tew: using DNC, DDT, parathion, and toxaphene, **1952,** III, 156. Notes on control, **1953,** II, 47.

Sun Scald — *see under* Functional disorders, Sun Scald.

Superficial Cork — *see under* Functional disorders, Drought Spot.

Surface Canker, apples — notes on, **1934,** III, 146.

Sweet William Rust — due to *Puccinia lychnidearum*, **1933,** III, 146.

Swift moths — *see under* Garden Swift Moth; Ghost Swift Moth.

Tachyporus hypnorum — *see under* Beneficial insects and mites, predators, general.

,, *obtusus* — *see under* Beneficial insects and mites, predators, general.

Taeniocampa opima — *see under* Northern Drab Moth.

Taphrina bullata — *see under* Leaf Blister, pears.

,, *cerasi* — *see under* Witches' Brooms.

,, *minor* — *see under* Cherry Leaf Curl.

Tar distillate washes — *see under* Winter washes, tar distillate.

,, oil washes — *see under* Winter washes, tar distillate.

Tarsonemid Mite–

of cereals — *see under* Grass and Cereal Mite.

of strawberries — *see under* Strawberry Mite.

Tarsonemus fragariae — *see under* Strawberry Mite.

,, *pallidus* — *see under* Strawberry Mite.

Tatter Leaf — *see under* Cherry Tatter Leaf.

TCA — *see under* Weedkillers.

TCPPA — used as blossom thinning spray, **1950,** II, 31. Not effective for pre-harvest drop, **1950,** III, 110.

Technical Section — *see under* Scientific Liaison Section.

Temperatures–

air — *see also under* Weather conditions.
Temperatures recorded during blossom time of a cherry and plum orchard over grass and bare soil strips, 100 feet wide, at heights of 3 feet and 5½ feet; figures over grass did not differ significantly from those over clean cultivation, **1944,** II, 19. Observations made during blossom period of black currants, **1950,** II, 26. Further information obtained on soil and air temperatures in connection with straw mulch investigations on soft fruit, **1951,** II, 27. **Forecasting the time of blossoming in apple trees from temperature records,** by S. C. Pearce and A. P. Preston, **1953,** III, 133.

soil — *see under* Soil temperature.

Tenuipalpus glaber — *see under* Flat Scarlet Mite.

Tensiometers — *see under* Soil moisture studies.

TEPP — fungistatic activity of, **1950,** III, 172.

Tetranychus crataegi — *see under* Red spider mites.

,, *telarius* — *see under* Red Spider Mite.

,, *urticae* — *see under* Red Spider Mite.

Tetrops praeusta — *see under* Little Longhorn Beetle.

Thanasimus formicarius — *see under* Ant Beetle.

Thinning — *see under* Blossom thinning; Fruit thinning.

Thiocarbamates — *see under* Apple Scab.

Thomasiniana crataegi — *see under* Hawthorn Stem Midge.

,, *oculiperda* — *see under* Red Bud Borer.

,, spp. — *see under* Gall midges.

,, *theobaldi* — *see under* Cane Blight; Raspberry Cane Midge.

Thrips — *see under* Rose Thrips.

Thrips fuscipennis — *see under* Rose Thrips.

Tineid Moth — observations on, **1935,** III, 166.

Tip layering, soft fruit — *see under* Propagation, blackberries; Propagation, hybrid berries; Propagation, layering; Propagation, loganberries.

Titan yellow — notes on, **1951,** II, 37. **A sensitive method for the determination of magnesium using Titan yellow,** by A. C. Mason, **1951,** III, 126.

Tomaspis sanguinea — *see under* Red and Black Froghopper.

Tomato (es)–

- Blight — notes on, **1932,** III, 81.
- Blotchy Ripening and Green Back — notes on, **1933,** III, 146.
- Leaf Mould — notes on, **1926-27** (S), III, 118.
- Moth — convenient source of egg for aided penetration studies, **1951,** II, 46.
- outdoor — **Outdoor tomato variety trial, 1943,** by W. Corbett and Hilary M. Hughes, **1943,** III, 44. **Outdoor tomato trials, 1944,** by Hilary M. Hughes: bush types need some form of training and support; crop records show these varieties compare favourably with standard varieties, **1944,** III, 38.
- Spotted Wilt — a virus disease—notes on, **1933,** III, 146.
- wilting — *see under Fusarium lycopersici.*

Top fruits — *see under* individual fruits or subject.

,, ,, , Experimental Farm — acreage, **1939,** I, 13; **1952,** I, 15.

Top grafting — *see under* Grafting.

Topworking — *see under* Grafting.

Tortricid moths — (note—*Archips podana* (Scop.), *Cacoecia podana* (Scop.), and *C. oporana* L. are synonymous).
see also under Bud Moth; Cherry-bark Tortrix Moth; Strawberry Tortrix Moth; Summer Fruit Tortricid.
observations on, **1952,** II, 40, III, 146; **1953,** II, 44. Observations on Apple Fruit Tortrix (*Batodes* sp.), **1932,** II, 46. Observations on Apple or Fruit Surface-eating Tortrix (*C. podana* (Scop.)), **1932,** III, 114; **1934,** III, 169; **1948,** III, 104. Observations on *Tortrix postvittana* Walker (Light-brown Apple Moth), **1933,** III, 178. **Tortrix investigations in 1933,** by G. L. Hey and A. M. Massee, **1933,** III, 228. **Observations on the effects of various gas mixtures of known composition on Tortrix larvae in store,** by G. L. Hey and A. M. Massee: of mixtures tried at 37·5° F., a mixture of 2·5% oxygen, 10% carbon dioxide, and 87·5% nitrogen was best for controlling Tortricid larvae, **1933,** III, 231. Observations on Tortricid moths and trials of derris and barium silicofluoride sprays and dusts, of which derris was the most promising, **1934,** II, 69. **Preliminary experiments on the control of Apple Surface-eating Tortricid larvae,** by F. J. D. Thomas, **1934,** III, 205. Damage caused by *Archips podana* (Scop.) under name of Apple Tortrix Moth, **1936,** III, 226. Observations on damage done by Tortricid moths, **1937,** III, 205. Observations on *Argyroploce urticana*; attacks strawberry; derris dust effective provided it is used directly the first sign of damage is detected in the field, **1939,** III, 71. Observations on *Ditula angustiorana*; larvae very susceptible to DDT dusts and sprays, **1946,** III, 126. Spraying against, **1950,** II, 42. Observations on *Cacoecia heparana* Schiff. and *C. podana* (Scop.), **1951,** II, 44, III, 152. Control measures for Tortricid larvae on apple, using DNC, DDT, and parathion, **1951,** III, 169.

Tortrix diversana — *see under* Tortricid moths.

,, *postvittana* — *see under* Tortricid moths.

Toxaphene — for control of Apple Sawfly, **1950,** IV, 213. Comparing various compounds, with DDT and lead arsenate, against Codling Moth, **1951,** II, 47. Effect on plums, with spray damage causing scorch, **1951,** III, 184. Used against Codling Moth, both with and without a synthetic sticker, compared with DDT and lead arsenate, **1952,** II, 43. Against Summer Fruit Tortricid, **1952,** II, 43, III, 156.

Toxins — *see under* Verticillium toxins.

TPC — *see under* Weedkillers.

Trace elements — *see under* Mineral deficiencies.

Trap bands — *see under* Tree banding.

Tree banding– — *see also under* Apple Blossom Weevil; Grease banding.

impregnation of material — **Apple Blossom Weevil experiments in 1934: impregnation of tree banding materials,** by R. M. Greenslade, A. M. Massee, and F. J. D. Thomas: not injurious to trees and some treatments very promising, **1934,** III, 180. **Studies of impregnation of tree banding materials. II. Apple Blossom Weevil and Codlin Moth experiments in 1935: a progress report,** by R. M. Greenslade and A. M. Massee: 33% 'Seekay' Wax AX.111 in trichlorethylene most attractive to the weevils, but did not attract Codling Moth to the same degree; was outstanding treatment in previous years, **1935,** III, 177. **Studies of impregnation of tree banding materials. III. Apple Blossom Weevil and Codling Moth experiments in 1936: a progress report,** by A. M. Massee, R. M. Greenslade, and J. H. Brair: of eight treatments on corrugated cardboard bands none was as attractive to insects as untreated bands, contrary to results obtained in previous years; it appeared that untreated bands will trap approximately 50% of larvae present in orchard; new impregnation materials caused injury to bark, **1936,** III, 232. **Studies of impregnated tree banding materials. IV. Apple Blossom Weevil and Codling Moth experiments in 1937,** by A. M. Massee, R. M. Greenslade, and A. J. Duarte; 'Seekay' treatment attracted Codling larvae, tetrachlorbenzene attracted weevils, and beta-naphthol repelled weevils, **1937,** III, 213. Using chemically treated corrugated cardboard bands, it was found that the number of insects caught was affected by the variations in the weight of chemicals in the band and by the width of the band, **1938,** II, 80.

Tree excavations — *see under* Root development studies.

,, fruits — *see under* Top fruits.

,, girth — *see under* Trunk girth.

,, growth — *see under* Growth.

,, injections — *see under* Plant injection.

,, Pit — *see under* Functional disorders, Tree Pit.

,, size — *see also under* Statistical studies.
in relation to other measurements, **1933,** II, 44. **The effect of size of tree on the relation between various records of roots and stems of apples,** by R. C. Knight and T. N. Hoblyn: confirmation obtained of former indications that percentage of fibre decreases with increasing weight of root system; proportion of stem is constant throughout wide range of size of tree; ratio of weight of scion to cross sectional area of main stem increases with weight of tree, **1933,** III, 117.

,, vigour — **The distribution of growth between roots, stems and leaves in a young apple tree and its possible bearing on the problem of stock**

Tree vigour–*continued*

effect on tree vigour, by M. C. Vyvyan: total annual increment in weight found to be distributed in approximately constant proportions between roots, stems, and leaves, irrespective of size and age of trees; extends Knight's concept of a constant ratio of stem increment to root increment to include leaves, **1933,** III, 122.

,, weight — *see also under* Growth; Tree size; Tree vigour.
effect of defeathering, **1925** (S), III, 38; **1927,** II, 38. Increase during maiden year, **1931,** II, 33. Annual increments, **1934,** II, 54. Estimation of by means of extension growth and trunk girth, **1952,** II, 28.

Tribolium confusum — *see under* Confused Flour Beetle.

Trichothecium roseum — *see under* Pink Rot.

Trifolium incarnatum — *see under* Crimson clover.

Triphaena comes — *see under* Lesser Yellow Underwing Moth.

Triphleps laevigatus — *see under* Anthocorid bugs.

,, *minutus* — *see under* Anthocorid bugs.

Triple-working, cherries — *see under* Double-working, cherries.

Trunk girth — *see also under* Statistical studies; Tree weight.
effect of defeathering, **1925,** II, 38; **1925** (S), III, 38; **1927,** II, 38.

Turbatrix aceti — *see under* Vinegar Eelworm.

Turf — Corticium Disease of in cover crop, **1941,** III, 42.

Turnips, bacterial rot — *see under* Soft Rot, turnips.

Twig Blight, cherries — *see under* Cherries, Twig Blight.

Tydeman's Early Worcester apple — *see under* Apples, varieties, Tydeman's Early Worcester.

,, Late Cox apple — *see under* Apples, varieties, Tydeman's Late Orange.

,, Late Orange apple — *see under* Apples, varieties, Tydeman's Late Orange.

Typhlocyba froggatti — *see under* Leafhoppers, apples; Leafhoppers, general; Leafhoppers, plums.

,, *quercus* — *see under* Leafhoppers, apples; Leafhoppers, plums.

,, *rosae* — *see under* Rose Leafhopper.

Typhlodromus (*Iphidulus*) *finlandicus* — notes on, **1949,** III, 130.

,, (*Iphidulus*) *tiliae* — notes on, **1949,** III, 130.

,, *spoofi* — notes on, **1949,** III, 130.

Uncinula necator — *see under* Vine Mildew.

Uniformity trials–

apples — notes on, **1950,** II, 29; **1951,** II, 33; **1952,** II, 28.

interpretation of — **The interpretation of uniformity trials,** by S. C. Pearce, **1949,** III, 91.

soil, restoration — notes on, **1950,** II, 23, 29; **1951,** II, 27, 33, 38; **1952,** II, 23, 28; **1953,** II, 25, 31.

Urea — *see under* Biennial bearing; Pears, blossom, non-setting of; Plant injection.

Urophlyctis alfalfae — *see under* Crown Gall, lucerne.

Vapourer Moth — oxygen uptake of eggs treated with fatal doses of nicotine was about normal, and embryos developed even though they failed to hatch; after treatment with petroleum emulsion, oxygen uptake

Vapourer Moth–*continued*
was depressed or inhibited and the embryos failed to develop, **1941,** II, 24.
Variation studies — *see under* Statistical studies.
Varieties–
collections, trials, and classification — *see under* individual fruits.
Vegetative propagation — *see under* Propagation.
Vein-banding–
gooseberries — *see under* Gooseberry Vein-banding.
pears — *see under* Pear Vein-banding.
plums — *see under* Plums, vein-banding.
Vein-chlorosis, raspberries — notes on, **1950,** II, 50; **1951,** II, 51.
Vein-clearing, cherries — *see under* Cherries, vein-clearing.
Veinlet Clearing, plums — *see under* Plum Veinlet Clearing.
Vein-pattern, Black Currant — *see under* Black Currant Vein-pattern.
Venturia inaequalis — *see also under* Apple Scab.
notes on, **1951,** II, 40; **1952,** II, 34. Comparison of toxicity of compounds to *Botrytis cinerea* and *Venturia inaequalis*, **1948,** II, 45. Aqueous extract of *Hedera helix* toxic to, **1949,** II, 45. Use for detailed study of nutritional differences between strains, **1950,** II, 38. Marked differences in capability of utilizing nitrogen sources found in *Venturia inaequalis* and *V. pirina*, **1950,** II, 45. **Modifications in the glass-slide spore-germination test for use in fungicide research,** by A. H. M. Kirby and E. L. Frick, **1952,** III, 161.
,, *pirina* — *see under* Pear Scab; *Venturia inaequalis*.
Verticillium albo-atrum — *see under* Verticillium Wilt.
,, *dahliae* — *see under* Blue Stripe Wilt; Verticillium Wilt.
,, spp. — *see under* Verticillium Wilt, general; Verticillium Wilt, rhubarb.
Verticillium toxins — notes on, **1950,** II, 39; **1951,** II, 41; **1952,** II, 35. **A method for the study of the effects of Verticillium toxins on the water relations of cut shoots,** by P. W. Talboys, **1951,** III, 149.
,, Wilt– — *see also under* Verticillium toxins.
cherries, Morello — due to *V. dahliae*, **1931,** III, 48.
general — (including hosts other than those indexed separately).
notes on, **1931,** III, 48; **1932,** III, 82; **1943,** II, 25; **1946,** II, 36; **1947,** II, 37.
hops — notes on, **1924,** III, 117; **1925** (S), III, 83; **1926-27** (S), III, 84; **1928,** II, 99; **1930,** II, 90; **1931,** II, 39; **1933,** III, 146; **1936,** III, 191; **1937,** II, 76, III, 185; **1938,** II, 77, III, 170; **1939,** III, 62; **1941,** III, 42; **1943,** II, 28; **1944,** II, 31, IV, 130; **1945,** II, 41; **1946,** II, 44; **1948,** II, 48; **1949,** II, 40, 48, IV, 178; **1950,** II, 38; **1951,** II, 40; **1952,** II, 35; **1953,** II, 38. **A wilt disease of hops,** by R. V. Harris: only variety affected Fuggle, **1925** (S), III, 92. **The Verticillium Wilt of hops: some facts and recommendations,** by R. V. Harris, **1935,** III, 158. **Verticillium Wilt of hops: a summary of information for growers,** by R. V. Harris and B. S. Furneaux, **1937,** IV, 257. **Verticillium Wilt of hops: a summary of observations during 1938,** by W. G. Keyworth, **1938,** IV, 244. Disease divided into fluctuating and progressive varieties; suggestion that disease mainly spread by cultivation processes; 2% formalin, at rate of 8 gal. per square yard, considerably reduced disease, **1939,** II, 34. 2% formalin in soil reduced amount of disease from 47% to 6%,

Verticillium Wilt–hops–*continued*

but reduction was not maintained, **1940,** II, 29. Disease greatly checked by plant hygiene, removal of infected soil, and disinfection of area with 2% formalin, **1941,** II, 27. In 1942 (second year after planting) 10% of the hops had contracted wilt showing that fallowing period had not greatly reduced infectivity of soil; naphthalene at ½ ton and 1 ton per acre had no effect, **1942,** II, 29. Experiment demonstrated that large quantities of either dung or sulphate of ammonia had no effect on disease incidence in badly infected areas, **1943,** II, 28. **Notes on varieties of hop resistant to Verticillium Wilt,** by W. G. Keyworth, **1946,** IV, 157. No host other than hop will act as indicator for *Verticillium albo-atrum,* **1947,** II, 37. In resistance trials, OR55 and OJ47 best from cultural viewpoint; in manurial trial added nitrogen gave greater wilt incidence, **1947,** II, 46. **Verticillium Wilt of the hop (*Humulus lupulus*): a note on the incidence of symptoms of Fluctuating Wilt in early, mid-season and late bine,** by W. G. Keyworth and Margaret M. Hitchcock, **1947,** III, 148. Nitrogen deficient plants show less severe symptoms than those grown in a complete nutrient, **1949,** II, 49; **1950,** II, 39. Investigation of differentiation in morphologically identical races, viz. progressive and fluctuating, **1951,** II, 40. Notes on the Wye and East Malling Wilt-resistant varieties and seedlings; reaction of sensitive and resistant varieties to culture filtrate from a progressive strain, **1952,** II, 35. **Verticillium Wilt of the hop. VII. Further studies on Wilt-resistant varieties,** by W. G. Keyworth, Margaret M. Hitchcock and Pamela M. Goode, **1952,** III, 112. **A method for determining the pathogenicity of strains of *Verticillium albo-atrum* isolated from the hop,** by P. W. Talboys and J. F. Wilson: method of growing hop plants in concrete tanks for determining pathogenicity of strains of *Verticillium albo-atrum,* **1953,** III, 158. **Wilt-tolerant hops,** by R. V. Harris: current information about varieties 1147, C2, D1, and D3, **1953,** IV, 208.

plums — **Verticillium Wilt of plum,** by W. G. Keyworth: due to *Verticillium albo-atrum,* **1943,** III, 52.

quinces — notes on; due to *V. dahliae,* **1932,** III, 82; **1936,** III, 189; **1937,** III, 183.

raspberries — *see under* Blue Stripe Wilt.

rhubarb — notes on, **1926-27** (S), III, 85, 118. Due to a *Verticillium,* **1928,** II, 100.

strawberries — notes on, **1937,** III, 185; **1943,** II, 25; **1944,** II, 27; **1946,** II, 36; **1948,** II, 39. No commercial variety immune to soil with *Verticillium,* **1947,** II, 37.

Vigour, tree — *see under* Tree vigour.

Vine Gall Mite — *see under* Vine Leaf Blister Mite.

Vinegar Eelworm — hydrogen peroxide for sterilizing, **1952,** III, 138.

Vine Leaf Blister Mite — observations on, **1941,** III, 50.

„ Mildew — notes on, **1928-29-30** (S), III, 130; **1933,** III, 146.

„ Weevil — observations on, **1947,** II, 41; **1948,** II, 43. DDT has no effect on adults, **1945,** III, 93.

Violet Felt Rot, carrots — *see under* Violet Root Rot.

„ Root Rot — on carrots, **1926-27** (S), III, 85. On strawberries, **1931,** III, 50. On mangolds, **1938,** III, 170.

Virus diseases– *see also under* common names of diseases (for full list of names appearing in Index see pages 169-175) *and under* individual fruits and plants. *Also under* Stone-fruit Viruses.

chemical inactivants — use of against, **1951,** II, 42.

heat treatment–

apples — notes on, **1951,** II, 42.

cherries — notes on, **1951,** II, 42.

hops — gave positive results against Mosaic-infected Fuggle, **1952,** II, 35. No complete or permanent inactivation yet achieved, **1953,** II, 39.

strawberries — notes on, **1951,** II, 42. Has yielded virus-free plants of certain important commercial varieties, **1952,** II, 37. **Progress in the heat treatment for strawberry virus diseases,** by A. F. Posnette, R. Cropley, and Christina E. Ellenberger: strawberry viruses of the crinkle types have been inactivated by maintaining plants at 37° C. for 7–11 days, **1952,** III, 128. Inactivation of viruses 1 to 4, **1953,** II, 40.

and propagation — *see under* Propagation, virus diseases.

transmissions between *Prunus* and *Malus* species — **Virus transmissions between *Prunus* and *Malus* species,** by A. F. Posnette, **1952,** III, 131.

V Moth — observations on, **1945,** III, 93.

Walnut(s)–

Bacterial Blight — notes on, **1925** (S), III, 85; **1928,** II, 100; **1928-29-30** (S), III, 143; **1931,** II, 40; **1932,** II, 42; **1933,** II, 51; **1935,** IV, 229; **1940,** III, 58; **1946,** IV, 164; **1947,** II, 27. Organism identified as *Pseudomonas juglandis,* the Bacterial Blight of California; first noticed in this country in 1925, **1931,** III, 47. Spraying trees with Bordeaux mixture (8: 8: 100) successfully controlled disease, **1935,** II, 40.

Blotch — *see under* Walnut Leaf Blotch.

Botrytis sp. — on nursery trees, **1932,** II, 43.

cropping — *see under* Walnuts, general.

curing — *see under* Walnuts, storage (including curing).

dieback — notes on, **1928-29-30** (S), III, 146.

diseases — *see also under* common names of diseases (for full list of those appearing in Index see pages 169-175).
Some diseases of walnuts, by Joyce B. Hamond: describes Walnut Bacterial Blight, Walnut Leaf Blotch, dieback, Graft Disease, fungi found on nuts in store; suggestions given for storing walnuts, **1928-29-30** (S), III, 143.

general — notes on, **1927,** II, 41; **1929,** II, 36; **1931,** II, 27; **1932,** II, 30; **1933,** II, 37; **1935,** II, 39; **1936,** II, 43; **1937,** II, 52; **1938,** II, 51; **1939,** II, 21; **1940,** II, 18; **1941,** II, 17; **1942,** II, 17; **1943,** II, 18; **1945,** II, 21; **1947,** II, 27; **1950,** II, 26; **1951,** II, 30; **1952,** II, 26; **1953,** II, 28. Incomplete lignification of shells, due to dull rainy weather, **1931,** III, 47. **A survey of the walnut position in England, 1932,** by Joyce B. Hamond, **1932,** III, 73. **Walnut growing in England—present and future,** by Joyce B. Hamond, **1932,** IV, 152. Grant from Ministry of Agriculture ceased in 1933, **1934,** II, 42. **Results of walnut research work at East Malling Research Station,** by Joyce B. Hamond, **1935,** IV, 228. Only Mayette and Franquette gave a crop—due to frost damage, **1944,** II, 21. **Variation in non-clonal Franquette and Mayette walnuts,** by Elizabeth M. Glenn, **1945,** III, 67. **Progress report on the walnut variety collection at**

Walnut(s)–general–*continued*

East Malling, by Elizabeth M. Glenn and A. W. Witt, **1945,** III, 70. High proportion of nuts of many varieties had imperfect shells, due probably to very wet summer, **1946,** II, 22. **Growing walnuts in England,** by Elizabeth M. Glenn, **1946,** IV, 160. Low temperatures damaged pistillate walnut flowers on young flower buds, **1949,** II, 29. High proportion of imperfectly ripened shells, **1950,** II, 26. **Walnut varieties,** by Elizabeth M. Glenn, **1950,** III, 80.

Graft Disease — notes on, **1928-29-30** (S), III, 146; **1932,** II, 43; **1933,** II, 51; **1935,** II, 59, IV, 230; **1946,** IV, 164. Due to *Chalaropsis thielaviodes*, a fungus not previously recorded for England, **1931,** II, 40. Value shown of formalin in reducing incidence of disease, **1934,** II, 64. Sterilization of rootstocks with 1% formalin completely successful, **1935,** II, 40.

Leaf Blotch — notes on, **1924,** III, 117; **1926-27** (S), III, 86; **1928-29-30** (S), III, 145; **1946,** IV, 164.

oil content determination — notes on, **1931,** II, 28; **1932,** II, 32; **1933,** II, 38.

propagation — *see under* Propagation, walnuts; Walnuts, general.

Silver Leaf — *see under* Silver Leaf, walnuts.

storage (including curing) — *see also under* Walnuts, general.
notes on, **1931,** II, 28; **1932,** II, 32; **1933,** II, 38. Fungi found on walnuts in store, **1928-29-30** (S), III, 147; **1931,** II, 40. **Some recent investigations into methods of storing walnuts during the winter,** by Joyce B. Hamond, **1933,** IV, 259. Partially drying walnuts in an oast with moderate fire promising, **1948,** II, 31.

varieties — *see under* Walnuts, general.

Warm water treatment, strawberry runners — *see under* Strawberry Mite; Strawberries, warm water treatment.

Washes — *see under* Spraying; Winter washes.

Wasp Beetle — observations on, **1936,** III, 224; **1951,** III, 155.

,, , chalcid — *see under* Chalcid wasps.

Water — *see also under* Irrigation.
Making the best use of water in food production, by W. S. Rogers, **1940,** IV, 82. **Plants and their water supply,** by W. S. Rogers, **1942,** IV, 103.

,, conservation — *see under* Cover cropping.

,, Core — *see under* Functional disorders, Water Core.

Watercress Beetle — noted eating carrot foliage, **1942,** III, 64.

Water culture — *see also under* Chlorosis; Spray culture.
seasonal absorption of nutrient salts by apple trees in water culture, **1936,** II, 58. **Apple trees in water culture,** by H. L. Pearse: solution aerated by (*a*) air bubbled through solution, (*b*) solution was constantly circulated and aerated, and (*c*) the roots were automatically sprayed with solution; trees in spray method showed most nearly normal root growth and defoliation occurred much later with this treatment than with bubbling method; iron was more readily available to trees in the spray method than in other methods, **1936,** III, 131. Leaf-bud cuttings, **1952,** II, 33.

Waterlogging — *see under* Functional disorders, 'The Death'.

Water penetration — effects of cover crops on, **1945,** II, 19.

,, purification — water purified by a precipitate of calcium carbonate followed by one of calcium phosphate, which entrains most of iron and manganese, **1953,** II, 35.

Water relations — *see also under* Black Currant Reversion; Soil conditioner; Soil moisture studies; Verticillium toxins.
of stock and scion, **1924,** II, 103; **1938,** II, 68. Of apples, **1925,** II, 55. Some correlation between conductivity for water of stems of stocks and that of stems of scions worked on them, **1926,** II, 53. **A note on the moisture content of the stems of different rootstocks,** by M. C. Vyvyan: M.II had consistently the lowest value and M.I, in spring, the highest; low value of M.II may be connected with low conductivity of that stock, **1935,** III, 131.

,, sprinkling against frost damage — *see under* Frost damage investigations.

,, -table control — **Utilization of an ornamental lake for water-table control experiments in relation to vegetative propagation,** by R. J. Garner and E. S. J. Hatcher: lake delta at Bradbourne planted with fruit tree rootstock cuttings and mineral-deficiency indicators, **1948,** III, 77.

,, , tap — precipitation method to remove traces of heavy metals, **1951,** II, 37.

Weather conditions — *see also under* Farm, Experimental, reports (as affecting Experimental Farm); Meteorology, horticultural; Pears, blossom, non-setting of; Wind.
annual report on weather conditions, **1927,** III, 85; **1928,** III, 131; **1929,** III, 101; **1930,** III, 127; **1931,** III, 55; **1932,** III, 79; **1933,** III, 111; **1934,** III, 127; **1935,** III, 121; **1936,** III, 114; **1937,** III, 158; **1938,** III, 145; **1939,** III, 48; **1940,** III, 44; **1941,** III, 35; **1942,** III, 33; **1943,** III, 49; **1944,** III, 43; **1945,** III, 76; **1946,** III, 74; **1947,** III, 85; **1948,** III, 83; **1949,** III, 80; **1950,** III, 90; **1951,** III, 97; **1952,** III, 80; **1953,** III, 130. **Summaries of mean temperature, rainfall and sunshine from August 1914 to December 1928,** compiled by H. M. Tydeman and H. C. Chapelow, **1928,** III, 134. **The effect of meteorological conditions on Apple Scab, with special reference to the control of the disease,** by M. H. Moore, **1928-29-30** (S), III, 157. **A fog in March—a frost in May?,** by A. P. Preston: no support for this theory, **1947,** IV, 169.

Weedkillers–

apples — notes on, **1950,** II, 22; **1951,** II, 27; **1952,** II, 23.

general — two preliminary trials to discover if weedkillers can safely be used in orchards, using sodium chlorate, MCPA, and DNOC in a standard gas oil emulsion; MCPA tested as control for *Equisetum* in an established orchard; Brompton plum rootstocks, infested with bindweed, sprayed with MCPA at 250 gal. per acre gave less bindweed in treated area while rooted layers behaved normally, **1949,** II, 23. **Some factors affecting the scope for the use of herbicides in fruit culture,** by F. R. Tubbs, **1953,** IV, 185.

raspberries — DNOC-fortified oil emulsion used as weedkiller, but no control of grasses obtained; MCPA, trichlor-acetic acid, and straw mulch compared, **1950,** II, 26. **Preliminary studies on herbicide applications in raspberry plantations,** by A. Wakil and D. W. P. Greenham: tested DNC-fortified oil emulsion, TCA, TPC, maleic hydrazide, and MCPA, but none really satisfactory, **1953,** III, 118.

strawberries — notes on, **1948,** II, 30; **1950,** II, 26; **1951,** II, 30; **1952,** II, 35. Isopropyl phenyl carbamate used, **1950,** II, 26.

Weevils — *see also under* common names of individual weevils (for full list of names appearing in Index see pages 158-168).
observations on *Otiorrhynchus ovatus*, **1938,** III, 180. Observations on *Barypithes pellucidus*, **1946,** III, 125. *Apion apricans* (Clover Seed Weevil), *Apion dichroum*, and *Apion nigritarse* on apple leaves, **1948,** III, 102.

Weight–

crops, estimation of — *see under* Statistical studies.

trees — *see under* Tree weight.

Wetting agents — *see also under* Lime-sulphur; Spray damage; Spray residues; Woolly Aphid.
notes on, **1933,** II, 50; **1934,** II, 61; **1950,** II, 44; **1952,** II, 30, 42. **An important new type of wetter,** by A. H. M. Kirby: Aerosol OT, **1950,** IV, 214. Study of relative efficiency of different wetters, **1951,** II, 35. Bordeaux-wetter damage on apples, **1951,** III, 184. Had effect on volume of liquid required to complete wetting, but little on quantity retained by a hairy leaf surface, **1952,** II, 43.

Weymouth Pine — stage of life-history of Black Currant Rust spent on this plant, **1940,** III, 58.

Wheat — *see under* Corn crops and trials.

Whitebeam, gall mite on — *see under* Gall mites.

Whiteflies — on strawberries, **1933,** III, 178; **1935,** II, 75; on pears, **1950,** III, 146; on apples, **1952,** III, 150.

Wildings–

apples, pears, and quinces — testing for rootstocks, **1935,** II, 37; **1936,** II, 42; **1937,** II, 51; **1938,** II, 49.

Willow cuttings — *see under* Mineral deficiencies; Pruning, general.

Wind — *see also under* Katabatic winds; Weather conditions.
Wind records in some Kent orchards, by A. P. Preston: using cup counter anemometers, tall masts are not necessary for establishing site differences for run of wind in young orchards, **1951,** III, 93.

Windbreaks — for fruit, **1950,** I, 17.

Winter Moth — observations on, **1952,** II, 39. Observations on caterpillars of the Winter Moth group, **1941,** III, 48. Use of petroleum oil against eggs, **1942,** II, 25. Recommendations for spraying caterpillars of Winter Moth group, **1942,** III, 65. **Caterpillars of the Winter Moth group and of other moths,** by A. M. Massee, **1943,** IV, 111. Reason for unusually heavy infestation of Winter Moth in a cherry orchard, **1946,** III, 127. Sprays to compare effects of DDT applied with DNOC and in the green cluster lime-sulphur, and also parathion in the green cluster lime-sulphur spray, **1949,** II, 43. **Results of some experiments to control Winter Moth and Tortricid larvae on apple,** by G. H. L. Dicker and J. B. Briggs: control obtained by 4% DNC-petroleum spray during first half of March or 0·05% DDT added to green cluster lime-sulphur spray in 1950; 0·005% parathion very effective when applied at the green cluster stage but less so in 1949 at 0·01%, **1951,** III, 169.

Winter washes– — *see also under* Acaricides; Beneficial insects and mites, predators, Fruit Tree Red Spider Mite; Cover cropping; Fruit Tree Red Spider Mite; Insecticides; Ovicides; Spraying, general.

general — notes on, **1925,** II, 73; **1926,** II, 63; **1928,** II, 109; **1929,** II, 79; **1930,** II, 101; **1931,** II, 41, 44; **1932,** II, 44, 47; **1936,** II, 71; **1937,** II, 85; **1938,** II, 83, 85; **1939,** II, 32; **1940,** II, 27; **1941,** II, 24, 25; **1942,** II, 26; **1943,** II, 26. **Field experiments with dormant winter washes,** by A. M. Massee, **1925** (S), III, 101. **Winter washes: modern developments in their use,** by A. M. Massee: uses of older winter washes, caustic soda, hot lime, and lime-sulphur are discussed, and the use and effect of tar distillates and DNC in the dormant season are described, **1927,** IV, 70. **Dinitrocresol and other dual purpose winter washes,** by H. Shaw and W. Steer, **1940,** III, 72.

Winter washes–*continued*

petroleum oil (including DNC) — *see also under* Apple Capsid; Blossom thinning; Brown Rot, cherries, Morello; Codling Moth; Hydrogen-ion concentration; Spray damage; Spray residues; Summer Fruit Tortricid; Tortricid moths; Vapourer Moth; Weedkillers; Winter Moth; Woolly Aphid.
notes on, **1925** (S), III, 101; **1927,** IV, 70. **Investigations on the preparation of field-made winter petroleum-oil sprays: a progress report,** by H. Shaw and W. Steer, **1936,** III, 246. **Dinitrocresol and other dual purpose winter washes,** by H. Shaw and W. Steer, **1940,** III, 72. Use with NAA sprays, **1947,** III, 101; **1948,** II, 35.

tar distillate — *see also under* Anthocorid bugs; Apple Blossom Weevil; Apple Capsid Bug; Apple Clearwing Moth; Apple Sucker; Blackberries, Red Berry disease; Brown Rot, cherries, Morello; Brown Scale; Cherry Blackfly; Cherry Fruit Moth; Coniopterygids; Insect control; Raspberry Moth; Strawberry Aphid; Woolly Aphid.
notes on, **1925,** II, 73; **1925** (S), III, 101; **1926,** II, 63; **1927,** II, 67; IV, 70; **1928,** II, 109; **1931,** II, 44; **1932,** II, 44, 47; **1936,** II, 71; **1937,** II, 85; **1938,** II, 83; **1939,** II, 32; **1940,** II, 26; **1943,** II, 26; **1944,** II, 30. **Preliminary field trials of tar distillate washes,** by A. M. Massee: noted that algae and lichens were completely destroyed on sprayed trees, **1924,** III, 143. **Tar distillate washes. Their comparative effectiveness, under different conditions, on various pests, and at increasing concentrations,** by W. Goodwin, A. M. Massee, and R. H. Le Pelley, **1925** (S), III, 114. **Further experiments with tar distillate washes,** by A. M. Massee, W. Steer, and W. Goodwin, **1926-27** (S), III, 137. **The relative value of tar-distillate washes, spring washes and grease-banding in any scheme of insect control,** by A. M. Massee, **1930,** IV, 111.

Wireworms — *Agriotes lineatus* attacking hops, **1939,** III, 70.

Witches' Brooms — disease of cherry trees, **1926-27** (S), III, 118; **1934,** III, 145.

Wither Tip–

cherries — result of infection of current year's shoots, usually through leaves, **1938,** III, 168.

plums — notes on, **1917-18,** 8.

Wood Leopard Moth — *see under* Leopard Moth.

Woolly Aphid– — *see also under* Pear Woolly Aphid.

apple varieties resistant to — *see under* Breeding, top fruits, apples.

general — observations on, **1933,** III, 179; **1934,** III, 167; **1939,** II, 30; **1951,** III, 159; **1953,** II, 24. **Note on the use of tar-distillate spraying and of greasebanding against the Woolly Aphis of apple (*Eriosoma lanigerum* Hausm.),** by R. H. Le Pelley, **1926-27** (S), III, 153. Methods of feeding Woolly Aphids artificially, **1930,** II, 83. **Laboratory trials of wetters against Woolly Aphis *Eriosoma lanigerum* (Hausm.),** by R. M. Greenslade: laboratory method devised; none of substances tested had any solvent action on wax of Woolly Aphid, **1934,** III, 185. **Observations on Woolly Aphis (*Eriosoma lanigerum* (Hausm.)) in 1934,** by R. M. Greenslade, **1934,** IV, 236*. Mineral oils no improvement on nicotine and soft soap for controlling, **1940,** II, 25. Insecticidal trial of E605 (parathion) and BHC; counts of cankered rootstocks showed no significant difference, **1948,** II, 46. Insecticidal trial, **1949,** II, 46. **The apple, pear, and quince aphids,** by G. H. L. Dicker, **1953,** IV, 213.

immunity to, causes — *see under* Rootstocks, resistance to Woolly Aphid.

Parasite — observations on, **1928-29-30** (S), III, 200; **1931,** II, 41; **1932,** II, 44, III, 115; **1933,** II, 53; **1943,** II, 25; **1944,** II, 28; **1945,** II, 36; **1946,**

* Treatment of dormant nursery stock against, **1935,** III, 184

Woolly Aphid–Parasite–*continued*

II, 38. **Some notes on the Woolly Aphis Parasite (*Aphelinus mali* Hald.),** by R. M. Greenslade and A. M. Massee: establishment in orchards, **1933,** III, 225. Note on successful use of parasite, **1934,** III, 168. **Further notes on the Woolly Aphid Parasite (*Aphelinus mali* Hald.),** by A. M. Massee, **1943,** III, 65. Parasite kept in cold storage during winter emerged successfully in following May, **1944,** II, 28. Parasites kept at temperature of 39° F. emerged successfully in following June; later released in commercial plantations, **1945,** II, 36. **Overwintering of the Woolly Aphid Parasite (*Aphelinus mali* Hald.) in low temperature apple stores,** by A. M. Massee: temperatures of 46° F. and 39° F. until May proved satisfactory; instructions for collecting shoots bearing parasitized aphids in the autumn and storing them, **1945,** IV, 142. Overwintering under apple gas storage conditions in the winter successfully undertaken and parasite later released in commercial orchards, **1947,** II, 40. Killed by DDT, BHC, or parathion spray, **1950,** III, 145.

resistance to — *see under* Breeding, top fruits, apples; Histological investigations; Rootstocks, resistance to Woolly Aphid.

rootstocks resistant to — *see under* Breeding, top fruits, rootstocks, apple; Rootstocks, resistance to Woolly Aphid.

Wrapping experiment, apples — *see under* Storage, apples.

Wye College Experimental Station — former name for East Malling Research Station—used from 1914-1918 inclusive.

Xanthomonas campestris — *see under* Black Rot, crucifers.

,, *juglandis* — *see under* Walnut Bacterial Blight.

,, *phaseoli* — *see under* Leaf Spot, French beans.

Xyleborus saxeseni — *see under* Small Shot Borer.

Xyloterus domesticum — *see under* Ambrosia Wood-boring Beetle.

Yellow-edge, strawberries — *see also under* Strawberry Aphid; Strawberries, virus diseases. notes on, **1931,** II, 38, III, 50; **1932,** II, 41; **1933,** II, 39, 49, 54; **1934,** II, 63; **1936,** II, 82, 84; **1938,** III, 171, IV, 227. Strawberry Aphid proved conclusively to be vector, but Tarsonemid Mite not a vector, **1934,** II, 70. **Studies on the transmission of the strawberry virus 'Yellow-edge' disease by insects. III. Aphid transmission experiments and period of infectibility,** by A. M. Massee: Strawberry Aphid able to transmit yellow-edge virus during March to August; typical aphid leaf-curl symptoms are first noticeable followed by the flattening effect, and finally the characteristic yellow-edge symptoms appear, **1936,** III, 229. Strains of yellow-edge virus, **1938,** II, 95. Intensity of reaction to yellow-edge virus not modified by warm water treatment for elimination of Tarsonemid Mite, **1940,** II, 24. Two distinct Yellow-edge diseases demonstrated, **1949,** II, 41.

Yellow Kroosjespruim — clonal plum rootstock used for peaches in Holland, **1950,** II, 22.

Yellows–

Black Currant — *see under* Black Currant Yellows.

raspberries — notes on, **1951,** II, 51.

Strawberry — *see under* Yellow-edge, strawberries.

Yellow Underwing Moth, Lesser — *see under* Lesser Yellow Underwing Moth.

Yield(s) — *see under* Cropping.

Youngberry — *see also under* Propagation, hybrid berries; Rubi, virus diseases.
notes on, **1940,** IV, 89; **1941,** II, 16; **1947,** II, 25. **Cultivated blackberries, dewberries, and hybrid berries—a progress report,** by A. Beryl Beakbane, **1932,** III, 68. **Trials of loganberries, blackberries and hybrid berries,** by A. Beryl Beakbane, **1938,** IV, 213. **'Leaf-bud' propagation of loganberry, Youngberry and blackberries,** by R. J. Garner and D. H. Hammond, **1938,** IV, 218.

Yponomeuta (padella) malinella — *see under* Small Ermine Moth.

Yucca, Leaf Spot — *see under* Leaf Spot, yucca.

Zeuzera pyrina — *see under* Leopard Moth.

Zinc — *see also under* Analysis, chemical, inorganic, zinc; Mineral deficiencies.
zinc deficiency and Apple Scab, **1941,** II, 21. Deficiency of in Edward VII apples in Bradbourne gardens, **1950,** II, 36.

,, fluoroarsenate — *see under* Arsenic, soluble; Codling Moth.

,, sulphate — *see under* Apple Scab; Spray damage.

Zythia fragariae — *see under* Strawberry Leaf Blotch.

APPENDIX

LIST OF PESTS* AND DISEASES

mentioned in the East Malling Research Station Annual Research Reports 1913-1953

The pests* and diseases mentioned in the Annual Research Reports often do not appear under their present names. To facilitate reference, separate lists of these, based on the Common English names, have therefore been prepared; they include

(*a*) as far as possible, the present generally accepted English and Scientific names.
(*b*) any other names under which they appear in the Reports (shown as synonyms).

Where there is no Common English name reference should be made to species, host, or group headings.

The correct present names cannot, however, be guaranteed in all cases, as complete up-to-date lists of these are not available at present.

In the preparation of the present lists, use has been made of 'The Pests of Fruits and Hops' (1954) by A. M. Massee, and the 'Common Names of British Insect and Other Pests', Part I (1947) and II (1952), published for the Association of Applied Biologists. For Scientific names of pests not in either of these works, 'A Check List of British Insects' (1945) by G. S. Kloet and W. D. Hincks has been used.

'Diseases of Fruits and Hops' (1955) by H. Wormald, and 'List of Common British Plant Diseases' (1944) compiled by the British Mycological Society, supplemented by other available sources, have formed the principal criteria for the diseases.

The authority has been omitted from the Scientific names of pests and causative organisms, as not being necessary for the purpose for which these lists have been prepared.

Acknowledgement is made of the assistance given by members of the staff of the Plant Pathology and Entomology Sections of this Station in the preparation of these lists.

* Including a few beneficial species.

LIST OF PESTS

Under Common English Names

(NOTE.—Present Common English and Scientific names appear in bold type.)

Common English Name	Scientific Name
Ambrosia Wood-boring Beetle	***Xyloterus domesticum***
American Cyclamen Mite	*see under* **Strawberry Mite**
Ant Beetle	***Thanasimus formicarius***
Anthocorid bugs*	
(*see also under* **Beneficial insects and mites**)	***Anthocoris nemoralis***
	„ nemorum
	Orius majusculus
	Triphleps laevigatus
	„ minutus
Aphids*	
	Aphis rubiphila
	„ schneideri
Apple Blossom Weevil	***Anthonomus pomorum***
„ Bud Weevil	***„ cinctus***
„ Capsid	***Plesiocoris rugicollis***
„ Clearwing Moth	***Aegeria myopaeformis***
	syn.–Conopia myopaeformis
	Sesia myopaeformis
„ Fruit Miner	*see under* **Apple Fruit Moth**
„ Fruit Moth	***Argyresthia conjugella***
syn.–Apple Fruit Miner	
„ Fruit Rhynchites	***Caenorhinus aequatus***
	syn.–Rhynchites aequatus
„ Fruit Tortrix	*see under* **Tortricid moths**
„ Leaf Gall Mite	*see under* **Leaf and Bud Mite**
„ Leafhoppers	*see under* **Leafhoppers, Fruit Tree**
„ Leaf Miner	***Lyonetia clerkella***
„ Leaf Skeletonizer	***Anthophila pariana***
„ and Plum Casebearer	***Coleophora nigricella***
	syn.–Eupista nigricella
„ Psocid	*see under* **Booklouse**
„ Sawfly	***Hoplocampa testudinea***
„ Sucker	***Psylla mali***
„ Surface-eating Tortrix	*see under* **Tortricid moths**
„ Tortrix Moth	*see under* **Tortricid moths**
„ Twig Cutter	***Rhynchites caeruleus***
„ Whitefly	*see under* **Whiteflies**
Aradid bugs*	
	Aradus aterrimus
Bean Aphid	*see under* **Black Bean Aphid**
Beetle Mite	***Sphaerozetes lapidarius***
	syn.–Euzetes lapidarius
Beetles*–	
chafer	***Gnorimus nobilis***

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Beetles* *cont.*–	
dung	***Aphodius fimetarius***
general	***Caenorhinus aeneovirens***
	syn.–*Rhynchites aeneovirens* (appears in Annual Research Reports as *Rhynchites minutus*)
	Dorcus parallelopipedus
	Librodor hortensis
	Mordella fasciata
	Prionychus ater
	Rhinosimus planirostris
	Sinodendron cylindricum
Beneficial insects and mites*–	
pollinators	***Anaspis humeralis***
	Corticaria elongata
	Corticarina gibbosa
	Enicmus transversus
	Meligethes aeneus
	Micrambe vini
predators, Fruit Tree Red Spider Mite ..	***Anthocoris nemorum***
	Anystis agilis
	Atractotomus mali
	Himacerus lativentris
	Neoseiulus macrophilus
	syn.–*Typhlodromus spoofi*
	Orius majusculus
	Psallus ambiguus
	Stethorus punctillum
	Typhlodromus (Iphidulus) finlandicus
	Typhlodromus (Iphidulus) tiliae
predators, general	***Anystis agilis***
	Neoseiulus macrophilus
	syn.–*Typhlodromus spoofi*
	Stethorus punctillum
	syn.–*Scymnus punctillum*
	Tachyporus hypnorum
	Tachyporus obtusus
	Typhlodromus (Iphidulus) finlandicus
	Typhlodromus (Iphidulus) tiliae
Big Bud Mite	*see under* **Black Currant Gall Mite**
Black Bean Aphid	***Aphis fabae***
syn.–Bean Aphid	*syn.*–*A. rumicis*
(*under* Bean Aphid *and* Black Bean Aphid in main index)	
Blackberry Leaf Miner Sawfly	*see under* **Raspberry Leaf-mining Sawfly**
„ **Mite**	***Phytoptus essigi***
	syn.–*Eriophyes essigi*
(*under* Blackberries, Red Berry Disease in main index)	
Black-bodied Sawfly	*see under* **Small Gooseberry Sawfly**
Black Currant Eelworm	*see under* **Leaf and Bud eelworms**
„ „ **Gall Mite**	***Phytoptus ribis***
syn.–Big Bud Mite	*syn.*–*Eriophyes ribis*
„ „ Leaf-curling Aphid	*see under* **Currant-Lettuce Aphid**
„ „ Leaf-curling Midge	*see under* **Black Currant Leaf Midge**
„ „ **Leaf Midge**	***Dasyneura tetensi***
syn.–Black Currant Leaf-curling Midge	
„ „ **Sawfly**	***Nematus olfaciens***
Black-kneed Capsid	***Blepharidopterus angulatus***
(*under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite in main index)	

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Black Weevil	*Magdalis cerasi*
Blister Beetle	*Lytta vesicatoria*
Blue Bug	*see under* **Rosy Apple Aphid**
Booklouse	*Stenopsocus stigmaticus*
syn.–Apple Psocid	
Bramble Shoot Moth	*Notocelia uddmanniana*
syn.–Bramble Shoot Webber	
Bramble Shoot Webber	*see under* **Bramble Shoot Moth**
Brassy Tooth-legged Flea Beetle	*see under* **Mangold Flea Beetle**
Broad Mite	*Tarsonemus latus*
	syn.–Hemitarsonemus latus
Broom Moth	*Ceramica pisi* (appears in Annual Research Reports as *Acronycta psi*)
Brown Leaf-curling Pear Aphid	*Longiunguis pyrarius*
,, Leaf-eating Weevil	*see under* **Brown Leaf Weevil**
,, **Leaf Weevil**	*Phyllobius oblongus*
syn.–Brown Leaf-eating Weevil	*syn.–Nemoicus oblongus*
Brown Scale	*see under* **Nut Scale**
,, Soft Scale	*see under* **Nut Scale**
,, **-tail Moth**	*Euproctis phaeorrhoea*
	syn.–Nygmia phaeorrhoea
Bryobia Mite	*see under* **Gooseberry Red Spider Mite**
Bud Moth	*Spilonota ocellana*
Buff Ermine Moth	*Spilosoma lubricipeda*
Cabbage White Butterfly	*see under* **Large White Butterfly**
Capsid bugs*	
	Camptobrochis lutescens
Chalcid wasps*	
	Copidosoma tortricia
Cherry-bark Tortrix Moth	*Ernarmonia formosana*
,, **Blackfly**	*Myzus cerasi*
,, Borer Beetle	*see under* **Oak Pinhole Borer**
,, **Fruit Moth**	*Argyresthia curvella*
	syn.–A. nitidella
,, **Leafhopper**	*Eupteryx stellulata*
syn.–Plum Leafhopper	*syn.–Cicadella stellulata*
,, Shield Bug	*see under* **Forest Bug**
Clay-coloured Weevil	*Otiorrhynchus singularis*
Clouded Drab Moth	*Orthosia incerta*
Clover Seed Weevil	*Apion apricans*
Cockchafer	*Melolontha melolontha*
Codling Moth	*Cydia pomonella*
syn.–Codlin Moth	*syn.–Ernarmonia pomonella*
Codlin Moth	*see under* **Codling Moth**
Comma Butterfly	*Polygonia c-album*
Common Earwig	*Forficula auricularia*
(*under* Earwigs in main index)	
,, **Gooseberry Sawfly**	*Pteronidea ribesii*
	syn.–Nematus ribesii
,, **Green Capsid**	*Lygus pabulinus*
syn.–Currant Capsid	
Green Capsid Bug	
,, **Marbled Carpet Moth**	*Dysstroma truncata*
	syn.–Cidaria truncata
	Hydriomena truncata
,, Swift Moth	*see under* **Garden Swift Moth; Ghost Swift Moth**
Confused Flour Beetle	*Tribolium confusum*

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Coxcomb Prominent Moth	*Lophopteryx camelina*
Crab Leaf Miner	*Nepticula malella*
Cuckoo Spit Insect	*see under* **Red and Black Froghopper**
Currant Capsid	*see under* **Common Green Capsid**
„ **Clearwing Moth**	*Aegeria tipuliformis*
„ Eelworm	*see under* **Leaf and Bud eelworms**
„ **-Lettuce Aphid**	*Hyperomyzus lactucae*
syn.–Black Currant Leaf-curling Aphid	
„ **Pug Moth**	*Eupithecia assimilata*
syn.–Pug Moth	
(*under* Pug Moth in main index)	
„ **Shoot Borer**	*Lampronia capitella*
syn.–Currant Shoot Moth	
„ Shoot Moth	*see under* **Currant Shoot Borer**
Dark Marbled Carpet Moth	*Cidaria immanata*
Death's Head Hawk Moth	*Acherontia atropos*
Dock Sawfly	*Ametastegia glabrata*
Dustywings*	
	Conwentzia pineticola
Earwigs*	
	Apterygida albipennis
Eelworms*	
	Heterodera **spp.**
	Meloidogyne **spp.**
(*under* Sodium hypochlorite in main index)	
False Tarnished Plant Bug	*Campylomma verbasci*
syn.–Mullein Leaf Bug	
Feathered Thorn Moth	*Colotois pennaria*
Fig Mite	*Eriophyes ficus*
Flat Bug	*Aneurus laevis*
Flat-celled Shot Borer	*see under* **Small Shot Borer**
Flat Scarlet Mite	*Tenuipalpus glaber*
Flax Flea Beetle	*Longitarsus parvulus*
Flea Beetles*	
	Derocrepis rufipes
Forest Bug	*Pentatoma rufipes*
syn.–Cherry Shield Bug	
Frog Hopper	*see under* **Red and Black Froghopper**
Fruit Bark Beetle	*Scolytus rugulosus*
	syn.–Eccoptogaster rugulosus
„ Surface-eating Tortrix	*see under* **Tortricid moths**
„ **Tree leafhoppers**	*see under* **Leafhoppers, Fruit Tree**
„ **Tree Red Spider Mite**	*Metatetranychus ulmi*
	syn.–Oligonychus ulmi
Gall midges*	
	Thomasiniana **spp.**
„ **mites***	
	Eriophyes löwi
	„ *piri* **var.** *arianus*
	Oxypleurites neglectus
	Phyllocoptes massalongoi
Garden Chafer	*Phyllopertha horticola*
„ **Swift Moth**	*Hepialus lupulinus*
syn.–Common Swift Moth	
(also appears in Annual Research Reports as Ghost Swift Moth)	

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Common English Name	Scientific Name
Ghost Swift Moth	***Hepialus humuli***
syn.–Common Swift Moth	
Goat Moth	***Cossus cossus***
Gooseberry Aphid	***Aphis grossulariae***
,, Bryobia	*see under* **Gooseberry Red Spider Mite**
,, **Red Spider Mite**	***Bryobia praetiosa***
syn.–Bryobia Mite	*syn.–B. nobilis*
Gooseberry Bryobia	
,, **sawflies**	*see under* **Common Gooseberry Sawfly; Small Gooseberry Sawfly**
Grass Aphid	***Metopolophium festucae***
syn.–Oat Aphid	*syn.–Myzus festucae*
(*under* Oat Aphid in main index)	
Grass and Cereal Mite	***Pediculopsis graminum***
syn.–Tarsonemid Mite, cereals	
Great Oak Beauty Moth	***Boarmia roboraria***
Green Apple Aphid	***Aphis pomi***
,, Capsid Bug	*see under* **Common Green Capsid**
Greenhouse Red Spider Mite	*see under* **Red Spider Mite**
Green Leaf-eating Weevil	*see under* **Green Leaf Weevil**
,, **Leaf Weevil**	***Phyllobius maculicornis***
syn.–Green Leaf-eating Weevil	
Ground beetles*	
	Laemostenus terricola
	Somotrichus unifasciatus
(*see also under* Strawberry Ground beetles in main index)	
Hawthorn Leaf Miner	***Lithocolletis corylifoliella***
,, **Stem Midge**	***Thomasiniana crataegi***
(*under* Gall midges in main index)	
Hazel Sawfly	***Croesus septentrionalis***
syn.–Nut Leaf Sawfly	
Hemipteron, predacious*	***Loricula elegantula***
Heteropterous plant bugs*	
	Kleidocerys resedae
Homopterous insects*	
	Ledra aurita
Honey Bee	***Apis mellifera***
(*under* Apples, blossoming in main index)	
Hop Capsid	***Calocoris fulvomaculatus***
syn.–Hop Shy Bug	
Shy Bug	
Hop-Damson Aphid	***Phorodon humuli***
Hop Eelworm	***Heterodera humuli***
	syn.–H. schachtii
,, **Flea Beetle**	***Psylliodes attenuata***
,, Froghopper	*see under* **Hop Leafhopper**
,, **Leafhopper**	***Euacanthus interruptus***
syn.–Hop Froghopper	
,, **Leaf Miner**	***Agromyza frontalis***
,, Red Spider (Mite)	*see under* **Red Spider Mite**
,, **Root Weevil**	***Epipolaeus caliginosus***
,, Shy Bug	*see under* **Hop Capsid**
,, **Snout Moth**	***Hypena rostralis***
,, Strig Maggot	*see under* **Hop Strig Midge**
,, **Strig Midge**	***Contarinia humuli***
syn.–Hop Strig Maggot	

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Common English Name	Scientific Name
Knotgrass Moth	***Apatele rumicis***
	syn.–Acronicta rumicis
Lacewing Bug	***Piesma capitata***
„ Fly	***Coniopteryx tineiformis***
	(*under* Dustywings in main index)
Lacewings	*see under* **Dustywings**
Ladybird beetles	*see under* Beneficial insects and mites, predators, general, in main index
Lappet Moth	***Gastropacha quercifolia***
Large Flax Flea Beetle	***Aphthona euphorbiae***
„ Fruit Bark Beetle	***Scolytus mali***
	syn.–Eccoptogaster mali
„ White Butterfly	***Pieris brassicae***
syn.–Cabbage White Butterfly	
	(*under* Cabbage White Butterfly in main index)
„ Willow Aphid	***Tuberolachnus saligna***
syn.–Osier Aphid	*syn.–Pterochlorus saligna*
Leaf and Bud eelworms*–	
Black Currant Eelworm, Currant Eelworm	***Aphelenchoides ritzema-bosi***
	syn.–A. ribes
Strawberry Eelworm	***Aphelenchoides besseyi***
	„ fragariae
	„ ritzema-bosi
	syn.–A. fragariae (part)
Leaf and Bud Mite	***Phyllocoptes schlechtendali***
syn.–Apple Leaf Gall Mite	
Leaf-curling Plum Aphid	***Brachycaudus helichrysi***
	syn.–Anuraphis padi
Leaf-cutter Bee	***Megachile* sp.**
syn.–Leaf-cutting Bee	
Leaf-cutting Bee	*see under* **Leaf-cutter Bee**
Leafhoppers, Fruit Tree–	
Apple Leafhopper, Plum Leafhopper	***Typhlocyba froggatti***
	„ quercus
Plum Leafhopper	***Erythroneura pruni***
Leaf weevils*	
	Phyllobius artemisiae
	(*under* Beetles, general in main index)
	Polydrosus cervinus
	„ sericeus
Leopard Moth	***Zeuzera pyrina***
syn.–Wood Leopard Moth	
Lesser Yellow Underwing Moth	***Triphaena comes***
Lettuce Aphid	***Nasonovia ribis-nigri***
Light-brown Apple Moth	***Tortrix postvittana***
	(*under* Tortricid moths in main index)
Light Emerald Moth	***Metrocampa margaritata***
Little Longhorn Beetle	***Tetrops praeusta***
syn.–Little Longicorn	
Little Longicorn	*see under* **Little Longhorn Beetle**
Lobster Moth	***Stauropus fagi***
Locusts*	
	Locusta migratoria migratorioides
Loganberry Beetle	*see under* **Raspberry Beetle**
Longhorned beetles*	
	Phymatodes testaceous
	Prionus coriarius

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Mangold Flea Beetle	***Chaetocnema concinna***
syn.–Brassy Tooth-legged Flea Beetle	
March Moth	***Alsophila aescularia***
	syn.–Anisopteryx aescularia
Meadow Nematode	***Pratylenchus pratensis***
Mealy Plum Aphid	***Hyalopterus pruni***
	syn.–H. arundinis
Mediterranean Fruit Fly	***Ceratitis capitata***
Minute Lacewing	***Conwentzia psociformis***
(*under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite in main index)	
Mites*	
	Petrobia lapidum
Mullein Leaf Bug	*see under* **False Tarnished Plant Bug**
Mushroom mites*	
	Caloglyphus kramerii
	Linopodes motatorius
	Oppia nitens
Muslin Moth	***Cycnia mendica***
Northern Drab Moth	***Taeniocampa opima***
„ **Winter Moth**	***Operophtera boreata***
Nut Aphid	***Corylobium avellanae***
„ **Bud Moth**	***Eucosma penkleriana***
syn.–Nut Bud Tortrix	
„ Bud Tortrix	*see under* **Nut Bud Moth**
„ **Gall Mite**	***Phytoptus avellanae***
	syn.–Eriophyes avellanae
„ **Leaf Blister Moth**	***Lithocolletis coryli***
„ **Leaf Roller**	***Byctiscus betulae***
„ Leaf Sawfly	*see under* **Hazel Sawfly**
Nutmeg Moth	***Mamestra trifolii***
Nut Scale	***Eulecanium coryli***
syn.–Brown Scale	*syn.–Lecanium coryli*
Brown Soft Scale	
(*see under* Brown Scale in main index)	
„ **Weevil**	***Balaninus nucum***
Oak Pinhole Borer	***Platypus cylindrus***
syn.–Cherry Borer Beetle	
Oat Aphid	*see under* **Grass Aphid**
Oat-Apple Aphid	***Rhopalosiphum insertum***
Osier Aphid	*see under* **Large Willow Aphid**
Pale Brindled Beauty Moth	***Phigalia pilosaria***
	syn.–Apocheima pedaria
Pallid Mite	*see under* **Strawberry Mite**
Pea and Bean Weevil	***Sitona lineatus***
	syn.–Sitones lineatus
Peach Aphid	***Appelia schwartzi***
	syn.–Anuraphis amygdali
„ **-Potato Aphid**	***Myzus persicae***
Pear Aleyrodes	*see under* **Whiteflies**
„ **-Bedstraw Aphid**	***Sappaphis pyri***
„ and Cherry Sawfly	*see under* **Pear Slug Sawfly**
„ „ „ Slugworm	*see under* **Pear Slug Sawfly**
„ **-Coltsfoot Aphid**	***Anuraphis farfarae***
„ **-Hogweed Aphid**	***Anuraphis subterranea***
„ **Leaf Midge**	***Dasyneura pyri***
„ Magdalis	*see under* **Pear Weevil**
„ **Midge**	***Contarinia pyrivora***

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Pear Sawfly	*Hoplocampa brevis*
„ **Slug Sawfly**	*Caliroa limacina*
syn.–Pear and Cherry Sawfly Pear and Cherry Slugworm	
„ **Sucker**	*Psylla pyricola* *syn.–P. pyri* *P. simulans*
„ **Weevil**	*Magdalis barbicornis*
syn.–Pear Magdalis	
„ **Woolly Aphid**	*Eriosoma lanuginosum*
Pith Moth	*Blastodacna atra*
Plum Cambium Miner	*Dendromyza* sp.
„ **Fruit Moth**	*Ernarmonia funebrana*
syn.–Red Plum Maggot	*syn.–Cydia funebrana*
„ **gall mites***–	
Plum Gall Mite	*Phytoptus phloeocoptes*
Plum Leaf Mite	*Phyllocoptes fockeui*
„ Leafhopper	*see under* **Cherry Leafhopper; Leafhoppers, Fruit Tree**
„ Leaf Mite	*see under* **Plum gall mites**
„ „ **Sawfly**	*Priophorus pallipes*
„ **Sawfly**	*Hoplocampa flava*
„ **Weevil**	*Magdalis ruficornis*
Potato Aphid	*Macrosiphon euphorbiae*
Psychid Moth	*Luffia ferchaultella*
Pug Moth	*see under* **Currant Pug Moth**
Puss Moth	*Cerura vinula*
Pygmy Mangold Beetle	*Atomaria linearis*
(*under* Beneficial insects and mites, general *and* pollinators in main index)	
Raspberry Aphid	*Aphis idaei* *syn.–Doralis idaei*
„ **Beetle**	*Byturus tomentosus*
syn.–Loganberry Beetle	
„ **Cane Midge**	*Thomasiniana theobaldi*
„ **Flea beetles***	*Batophila aerata* „ *rubi*
„ Gall Mite	*see under* **Raspberry Leaf and Bud Mite**
„ **Leaf and Bud Mite**	*Phytoptus gracilis*
syn.–Raspberry Gall Mite Raspberry Mite	*syn.–Eriophyes gracilis*
„ **Leaf-mining Sawfly**	*Metallus pumilus*
syn.–Blackberry Leaf Miner Sawfly	*syn.–Entodecta pumila*
„ Mite	*see under* **Raspberry Leaf and Bud Mite**
„ **Moth**	*Lampronia rubiella*
syn.–Raspberry Shoot Moth Red Bud Maggot	*syn.–Incurvaria rubiella*
„ Shoot Moth	*see under* **Raspberry Moth**
Red and Black Froghopper	*Cercopis vulnerata*
syn.–Cuckoo Spit Insect Frog Hopper	*syn.–C. sanguinea* *Tomaspis sanguinea*
„ **Bud Borer**	*Thomasiniana oculiperda*
„ Bud Maggot	*see under* **Raspberry Moth**
„ **Currant Blister Aphid**	*Cryptomyzus ribis*
„ Leaf Aphid	*see under* **Rosy Leaf-curling Aphid**
„ Plum Maggot	*see under* **Plum Fruit Moth**

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Red Spider Mite	*Tetranychus urticae*
syn.–Greenhouse Red Spider Mite	*syn.–T. telarius*
Hop Red Spider (Mite)	
Strawberry Red Spider	
„ **spider mites***	
	Amphitetranychus viennensis
	syn.–Tetranychus crataegi
„ **Velvet Mite**	*Allotrombidium fuliginosum*
Rhododendron Bug	*Stephanitis rhododendri*
Root Lesion nematodes	*Pratylenchus* spp.
Rose Leafhopper	*Typhlocyba rosae*
syn.–Strawberry Leafhopper	
„ **Thrips**	*Thrips fuscipennis*
Rosy Apple Aphid	*Sappaphis mali*
syn.–Blue Bug	*syn.–Anuraphis roseus*
„ **Leaf-curling Aphid**	*Sappaphis devecta*
syn.–Red Leaf Aphid	*syn.–Anuraphis crataegi*
Rove Beetle	*Oligota flavicornis*
(*under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite in main index)	
Rubus Aphid	*Amphorophora rubi*
St. Mark's Fly	*Bibio hortulanus*
Scurfy (Rose) Scale	*Aulacaspis rosae*
Seven Spot Ladybird	*Coccinella septempunctata*
(*under* Beneficial insects and mites, predators, Fruit Tree Red Spider Mite in main index)	
Shallot Aphid	*Myzus ascalonicus*
Shield Bug	*Sehirus bicolor*
Short-cloaked Moth	*Nola cucullatella*
Shot-hole Beetle	*see under* **Shot-hole Borer**
„ „ **Borer**	*Anisandrus dispar*
syn.–Shot-hole Beetle	
Shy Bug	*see under* **Hop Capsid**
Silver-green Leaf Weevil	*Phyllobius argentatus*
Slugs*	
	Agriolimax reticulatus
Small Ermine Moth	*Yponomeuta malinella*
	syn.–Y. padella malinella
„ **Gooseberry Sawfly**	*Pristiphora pallipes*
syn.–Black-bodied Sawfly	
„ **Shot Borer**	*Xyleborus saxeseni*
syn.–Flat-celled Shot Borer	
Social Pear Sawfly	*Neurotoma saltuum*
	syn.–N. flaviventris
Soldier Beetle	*Cantharis livida*
Spring Usher Moth	*Erannis leucophaeris*
Stag Beetle	*Lucanus cervus*
Stem and Bulb Eelworm	*Ditylenchus dipsaci*
syn.–Stem Eelworm	
Stem Eelworm	*see under* **Stem and Bulb Eelworm**
Strawberry Anthonomus	*see under* **Strawberry Blossom Weevil**
„ **Aphid**	*Pentatrichopus fragaefolii*
	syn.–Capitophorus fragariae
„ **Blossom Weevil**	*Anthonomus rubi*
syn.–Strawberry Anthonomus	
„ Eelworm	*see under* **Leaf and Bud eelworms**
„ **Fruit Weevil**	*Barypithes araneiformis*
„ Leafhopper	*see under* **Rose Leafhopper**

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Strawberry Mite	***Tarsonemus pallidus***
syn.–American Cyclamen Mite	*syn.–T. fragariae*
Pallid Mite	
Tarsonemid Mite, strawberries	
,, Moth	*see under* **Strawberry Tortrix Moth**
,, Red Spider	*see under* **Red Spider Mite**
,, **Rhynchites**	***Caenorhinus germanicus***
	syn.–Rhynchites germanicus
,, **Root weevils***	
	Otiorrhynchus ovatus
Strawberry Weevil	***Otiorrhynchus rugosostriatus***
,, **Seed Beetle**	***Ophonus rufipes***
	syn.–O. pubescens
,, Tarsonemid Mite	*see under* **Strawberry Mite**
,, **Tortrix Moth**	***Peronea comariana***
syn.–Strawberry Moth	*syn.–Argyrotoza comariana*
,, Weevil	*see under* **Strawberry Root weevils**
,, Whitefly	*see under* **Whiteflies**
Summer Fruit Tortricid	***Adoxophyes orana***
	syn.–Capua reticulana
Swift moths	*see under* **Garden Swift Moth; Ghost Swift Moth**
Tarsonemid Mite, cereals	*see under* **Grass and Cereal Mite**
,, ,, , strawberries	*see under* **Strawberry Mite**
Tineid Moth	***Solenobia inconspicuella***
Tomato Moth	***Diataraxia oleracea***
Tortricid moths*–	
Apple Fruit Tortrix	***Ditula angustiorana***
	syn.–Batodes sp.
Apple Surface-eating Tortrix / Apple Tortrix Moth / Fruit Surface-eating Tortrix	***Cacoecia oporana***
	syn.–Archips podana
	Cacoecia podana
	Argyroploce urticana
	Pandemis heparana
	syn. Cacoecia heparana
	Tortrix diversana
Vapourer Moth	***Orgyia antiqua***
Vine Gall Mite	*see under* **Vine Leaf Blister Mite**
Vinegar Eelworm	***Turbatrix aceti***
Vine Leaf Blister Mite	***Phytoptus vitis***
syn.–Vine Gall Mite	
Vine Weevil	***Otiorrhynchus sulcatus***
V Moth	***Itama wauaria***
Wasp Beetle	***Clytus arietis***
Watercress Beetle	***Phaedon tumidulus***
Weevils*	
	Apion dichroum
	,, ***nigritarse***
	Barypithes pellucidus
Whiteflies*	
Apple Whitefly / Strawberry Whitefly	***Aleyrodes*** (*Aleurodes*) ***fragariae***
	syn.–A. lonicerae
Pear Aleyrodes	***Aleyrodes*** **sp.**
Winter Moth	***Operophtera brumata***

* These collective headings include insects not indexed under an accepted Common English name.

Common English Name	Scientific Name
Wireworms*	
	Agriotes lineatus
Wood Leopard Moth	*see under* **Leopard Moth**
Woolly Aphid	***Eriosoma lanigerum***
,, ,, **Parasite**	***Aphelinus mali***
Yellow Underwing Moth, Lesser	*see under* **Lesser Yellow Underwing Moth**

* These collective headings include insects not indexed under an accepted Common English name.

LIST OF DISEASES

Under Common English Names

(NOTE.—Present Common English and Scientific names appear in bold type.)

Common English Name	Cause or Causative Organism
Angular Leaf Spot	***Phyllosticta angulata,*** associated with
Antirrhinum Leaf Spot	***Cercosporella antirrhini***
„ **Rust**	***Puccinia antirrhini***
syn.–Snapdragon Rust	
Apple Canker	***Nectria galligena***
„ **Mildew**	***Podosphaera leucotricha***
„ **Mosaic**	a virus
„ **Scab**	***Venturia inaequalis***
Armillaria Root Rot	***Armillaria mellea***
Bacterial Blight	*see under* name of host
„ **Blossom Blight**–	
cherries, Morello	***Pseudomonas mors-prunorum*** +unknown bacterium
pears	***Pseudomonas syringae*** *syn.–P. prunicola*
„ **Canker**	***Pseudomonas mors-prunorum*** and/or ***P. syringae*** *syn.–P. prunicola*
syn.–Bacteriosis Dieback	
Bacteriosis	*see under* **Bacterial Canker**
„ , lilac	*see under* **Lilac Bacterial Blight**
Bark Split, plums	a virus
Baumforth's Disease	*see under* **Leaf Curl,** raspberries
Bean Scab	***Colletotrichum lindemuthianum***
Beetroot, rot	***Phoma betae***
Bitter Pit	*see under* **Functional disorders**
„ **Rot**	***Gloeosporium*** **spp.**
Blackberries, dieback	*see under* **Functional disorders, Dwarf Lateral Scorch**
Blackberries, **Red Berry Disease**	caused by a mite, ***Phytoptus essigi***
Blackberry Dwarf	*see under* **Rubus Stunt**
„ **Mosaic**	a virus
Blackberry Rust	***Phragmidium violaceum***
Black Blotch, raspberries	***Cryptosporium minimum,*** associated with
Black currants, **dieback**	***Eutypa lata*** **var.** ***ribis,*** perfect stage *syn.–Cytosporina ribis*
Black Currant Reversion	a virus
„ „ Rust	*see under* **Currant Rust**
„ „ **Vein-pattern**	a virus
„ „ **Yellows**	a virus
Black Root Rot, hops	***Phytophthora cactorum*** and/or ***P.*** **sp.**
syn.–Phytophthora Root Rot	
„ „ „ , raspberries	various fungi
„ „ „ , strawberries	various fungi
Black Rot, apples	***Physalospora obtusa*** *syn.–Sphaeropsis* sp.
„ „ , carrots	***Alternaria radicina***

Common English Name	Cause or Causative Organism
Black Rot, crucifers	*Xanthomonas campestris*
	syn.–Bacterium campestre
Blister Canker	*see under* **Branch Blister**
Blossom Wilt	*see under* **Brown Rot**
Blotchy Pit	*see under* **Functional disorders**
Blue Blotch	*see under* **Purple Blotch,** blackberries
„ **Mould**	***Penicillium expansum***
„ **Stripe Wilt**	***Verticillium dahliae***
Botrytis Rot	*see under* **Grey Mould** (below), *and Botrytis* sp. in main index
Branch Blister	a functional disorder
syn.–Blister Canker	
Broccoli, spotting	***Alternaria* sp.**
Brown Rot	***Sclerotinia fructigena***
	syn.–Monilia fructigena
	Sclerotinia fructicola
	syn.–S. americana
	Sclerotinia laxa
	syn.–Monilia cinerea
	S. cinerea
Bud Rot	***Fusarium lateritium*; *F.* sp.**
syn.–Fusarium Bud Rot	
Bushy Dwarf	*see under* **Curly Dwarf**
Cane Blight, raspberries	***Leptosphaeria coniothyrium***
	syn.–Coniothyrium fuckelii
„ **Spot**	***Elsinoë veneta,*** perfect stage
	syn.–Gloeosporium venetum
	Plectodiscella veneta
Canker and Dieback, mulberries	***Fusarium lateritium***
Cauliflower Disease, strawberries	***Corynebacterium fascians*** (with ***Aphelenchoides* spp.**)
Cercospora Leaf Spot	***Cercospora cantuariensis***
syn.–Hop Leaf Spot	
Chat Fruit	a virus
Cherries, Dieback	*see under* **Bacterial Canker**
Cherry Leaf Curl	***Taphrina minor***
	syn.–Exoascus minor
„ „ **Scorch**	***Gnomonia erythrostoma***
„ **Mottle**	a virus
„ **Necrotic Ring-spot**	a virus
„ **Rasp Leaf**	a virus
„ **Rosette**	a virus
„ **Rusty Mottle**	a virus
„ **Scab**	***Fusicladium cerasi***
„ **Small Leaf**	a virus
„ **Tatter Leaf**	a virus
„ **Twig Blight**	***Sclerotinia laxa***
„ **Vein-clearing**	a virus
Chlorotic Disease, hops	a virus
Cluster Cup Rust–	
gooseberries	***Puccinia pringsheimiana***
medlars	***Gymnosporangium confusum***
Cobb's Mosaic, hops	a virus
Cobnut Mildew	***Phyllactinia corylea***
syn.–Nut Mildew	*syn.–P. suffulta*
Collar Rot, apples	***Phytophthora cactorum***
„ „, red currants	*see under* **Fomes Collar Rot**
Coral Spot	***Nectria cinnabarina***

Common English Name	Cause or Causative Organism
Corticium Disease, turf	***Corticium fuciforme***
Cox Spot	a functional disorder
Crinkle, strawberries	a virus
Crown Gall	***Agrobacterium tumefaciens*** *syn.–Bacterium tumefaciens*
,, ,, , lucerne	***Urophlyctis alfalfae***
,, **Rot**, raspberries	***Fusarium* sp.**
Curly Dwarf, raspberries	? a virus
syn.–Bushy Dwarf	
Currant Rust	***Cronartium ribicola***
syn.–Black Currant Rust	
Czar Spot	probably due to drought
'The Death'	*see under* **Functional disorders**
Dieback	*see under* **Bacterial Canker**
Dieback, blackberries	*see under* **Functional disorders, Dwarf Lateral Scorch**
,, , black currants	*see under* Black currants, **dieback**
,, , loganberries	*see under* **Functional disorders, Dwarf Lateral Scorch**
,, , mulberries	*see under* **Canker and Dieback**, mulberries
,, , raspberries	*see under* **Functional disorders, Dwarf Lateral Scorch**
Drought Spot	*see under* **Functional disorders**
Dwarf	*see under* **Rubus Stunt**
Dwarf Lateral Scorch	*see under* **Functional disorders**
Eye Rot	***Nectria galligena***
Fluffy Tip, hops	a virus
Fomes Collar Rot	***Fomes ribis***
syn.–Collar Rot, red currants	
Fomes Disease	***Fomes pomaceus***
Forsythia Bacterial Blight	***Pseudomonas* sp.**
Functional disorders	includes **Bitter Pit, Blotchy Pit, 'The Death', Drought Spot, Dwarf Lateral Scorch, Internal Breakdown, Internal Cork, Jonathan Spot, Lenticel Spotting, Sun Scald, Superficial Cork, Tree Pit, Water Core**
Fusarium Bud Rot	*see under* **Bud Rot**
Gloeosporium Leaf Spot	*see under* **Leaf Spot**, currants; **Leaf Spot**, gooseberries
Gloeosporium rot	***Gloeosporium album***
(*under Gloeosporium album* in main index)	
Gooseberry Mildew, American	***Sphaerotheca mors-uvae***
,, ,, , **European**	***Microsphaera grossulariae*** *syn.–Sphaerotheca grossulariae*
,, **Vein-banding**	a virus
Green Blotch	*see under* Frost damage investigations, apples, in main index
,, **Petal Disease**	a virus
Grey Mould	***Botrytis cinerea***
syn.–Botrytis Rot	
Hawthorn Leaf Blotch	***Sclerotinia crataegi***
Hop Canker	***Gibberella pulicaris,*** perfect stage *syn.–Fusarium sambucina*
,, **Downy Mildew**	***Pseudoperonospora humuli***
,, **Leaf Curl**	a virus
,, Leaf Spot	*see under* **Cercospora Leaf Spot**
,, **Mildew**	***Sphaerotheca humuli***
syn.–Hop Mould	

Common English Name	Cause or Causative Organism
Hop Mosaic	a virus
,, Mould	*see under* **Hop Mildew**
,, **'Oak Leaf'**	a virus
Hops, leaf disease	***Ascochyta* sp.**
Internal Breakdown	*see under* **Functional disorders**
,, **Cork**	*see under* **Functional disorders**
Jonathan Spot	*see under* **Functional disorders**
Layer beds, *Prunus* spp., wilting in	***Cylindrocladium scoparium***
Leaf Blight, celery	***Septoria apii***
,, ,, , medlars	***Fabraea maculata*** *syn.–Entomosporium maculatum*
,, ,, , pears *syn.*–Leaf Spot, pears	***Fabraea maculata*** *syn.–Entomosporium maculatum*
,, ,, , quinces *syn.*–Quince Leaf Scald Quince Leaf Spot	***Fabraea maculata*** *syn.–Entomosporium maculatum*
,, **Blister,** pears	***Taphrina bullata***
,, **Blotch,** dahlias	***Phyllosticta dahliaecola***
,, ,, , medlars	***Sclerotinia mespili***
,, ,, , quinces	***Sclerotinia cydoniae***
,, ,, , Shasta daisy	***Septoria leucanthemi***
,, **Burn,** strawberries	a virus
,, **Curl,** raspberries *syn.*–Baumforth's Disease	a virus
,, **Fleck,** pears *syn.*–Leaf Spot, pears	***Mycosphaerella sentina*** *syn.–Septoria pyricola*
,, **Roll, Plum**	a virus
,, **Scorch,** strawberries	***Diplocarpon earlianum***
,, **Spot,** apples	*see under* **Black Rot,** apples
,, ,, , apricots	*see under* **Bacterial Canker**
,, ,, , beetroot	***Ramularia beticola***
,, ,, , cherries	*see under* **Bacterial Canker**
,, ,, , cherries, Morello	*see under* **Bacterial Blossom Blight,** cherries, Morello
,, ,, , currants *syn.*–Gloeosporium Leaf Spot	***Pseudopeziza ribis*** *syn.–Gloeosporium ribis*
,, ,, currants, **Septoria**	***Mycosphaerella ribis***
,, ,, , *Elaeagnus*	***Phyllosticta argyrea***
,, ,, , French beans	***Xanthomonas phaseoli*** *syn.–Bacterium phaseoli*
,, ,, , gooseberries *syn.*–Gloeosporium Leaf Spot	***Pseudopeziza ribis*** *syn.–Gloeosporium ribis*
Leaf Spot, hops	*see under* **Cercospora Leaf Spot**
Leaf Spot, horse-radish	***Ramularia armoraciae***
,, ,, , lilac	***Phyllosticta syringae***
Leaf Spot, pears	*see under* **Leaf Blight,** pears; **Leaf Fleck,** pears
Leaf Spot, plums	*see under* **Bacterial Canker**
,, ,, , quinces	*see under* **Leaf Blight,** quinces
,, ,, , raspberries	*see under* **Cane Spot,** raspberries
,, ,, , strawberries	***Mycosphaerella fragariae***
,, ,, , yucca	***Coniothyrium concentricum***
Lenticel Spotting	*see under* **Functional disorders**
Lilac Bacterial Blight *syn.*–Bacteriosis, lilac	***Pseudomonas syringae*** *syn.–P. prunicola*
Lilies, wilting	***Botrytis elliptica***
Line Pattern, plums	a virus
Loganberries, dieback	*see under* **Functional disorders, Dwarf Lateral Scorch**

Common English Name	Cause or Causative Organism
Loganberry Dwarf	*see under* **Rubus Stunt**
Medlar Mildew	***Podosphaera leucotricha***
Mild Crinkle, strawberries	*see under* **Crinkle,** strawberries
Mildew	*see under* name of host
Mint Rust	***Puccinia menthae***
Mulberry Bacterial Blight	***Pseudomonas mori*** *syn.–Bacterium mori*
Nettlehead, hops	a virus
Nut Drop	***Sclerotinia fructigena***
	(*under* Brown Rot, cobnuts and filberts in main index)
Nut Mildew	*see under* **Cobnut Mildew**
Onion Downy Mildew	***Peronospora destructor*** *syn.–P. schleideni*
Papery Bark Canker	***Stereum purpureum,*** associated with
Parsnip Downy Mildew	***Plasmopara nivea***
Peaches, rot on	***Rhizopus nigricans***
Pea Mildew	***Erysiphe polygoni***
„ **Pod Spot**	***Ascochyta pisi***
Pear Canker	***Nectria galligena***
„ **Mildew**	***Podosphaera leucotricha***
„ **Scab**	***Venturia pirina***
„ **Vein-banding**	a virus
Phytophthora Root Rot	*see under* **Black Root Rot,** hops
Pine Blister Rust	***Coleosporium senecionis***
Pink Rot	***Trichothecium roseum*** *syn.–Cephalothecium roseum*
Plum Concentric Ring Spot	*see under* **Plum Ring Spot and Shot Hole**
Plum Leaf Roll	a virus
„ **Mosaic**	a virus
„ **Ring Spot and Shot Hole** *syn.*–Plum Concentric Ring Spot	a virus
„ **Scab**	***Fusicladium carpophilum*** *syn.–Cladosporium carpophilum*
Plums, Dieback	*see under* **Bacterial Canker**
Plums, Stunt	a virus
„ , **vein-banding**	a virus
Plum Veinlet Clearing	a virus
Potato Blight	***Phytophthora infestans***
„ **Dry Rot**	***Fusarium oxysporum***
„ **Powdery Scab**	***Spongospora subterranea***
Prune Dwarf	a virus
Purple Blotch, blackberries *syn.*–Blue Blotch	***Rhabdospora ramealis*** *syn.–Septocyta ramealis*
Quince Leaf Scald	*see under* **Leaf Blight,** quinces
„ Leaf Spot	*see under* **Leaf Blight,** quinces
Quince Mildew	***Podosphaera leucotricha***
Quinces, spotting	***Phoma*** **spp.**
	(*under Phoma* spp. in main index)
Raspberries, dieback	*see under* **Functional disorders, Dwarf Lateral Scorch**
Raspberry Midge Blight	***Didymella applanata; Fusarium sp.; Leptosphaeria coniothyrium,*** following attack of **Raspberry Cane Midge**
„ **Mildew**	***Sphaerotheca humuli***
„ **Mosaic**	a virus
„ **Rust**	***Phragmidium rubi-idaei***
Red Berry Disease	*see under* Blackberries, **Red Berry Disease**
„ **Core Disease**	***Phytophthora fragariae***

Common English Name	Cause or Causative Organism
Red Plant	probably similar to **Cauliflower Disease**
Reversion, Black Currant	*see under* **Black Currant Reversion**
Reversion, Rubi	*see under* **Rubus Stunt**
Rhubarb Rust	***Puccinia phragmitis***
Rhubarb Wilt	*see under* **Verticillium Wilt,** rhubarb
Ripe Rot, grapes	***Glomerella cingulata***
Roesleria Root Rot	***Roesleria hypogaea***
Rough Bark Canker	cause unknown
Rubbery Wood	a virus
Rubus Stunt *syn.*–Blackberry Dwarf Dwarf Loganberry Dwarf Reversion	a virus
Rust, plums	***Puccinia pruni-spinosae***
Scald	*see under* Storage, apples in main index
Septoria Leaf Spot	***Mycosphaerella ribis*** (*under* Leaf Spot, currants, Septoria in main index)
Septoria Spot, blackberries	***Septoria rubi***
Shoot Wilt, cherries and plums	*see under* **Bacterial Canker**
Shot Hole	*see under* **Bacterial Canker; Plum Ring Spot and Shot Hole**
Silver Leaf	***Stereum purpureum***
Small Hop Disease	cause unknown
Snapdragon Rust	*see under* **Antirrhinum Rust**
Soft Rot, turnips	***Erwinia carotovora*** *syn.–Bacillus carotovorus*
Sooty Blotch	***Gloeodes pomigena***
„ Mould	***Coniothecium chomatosporum***
Split Leaf Blotch, hops	a virus
Spur Blight	***Didymella applanata***
Stalk-End Rot	***Botrytis cinerea; Phoma* spp.**
Stony Pit, pears	a virus
Strawberries, **Cambridge X virus**	a virus
„ , **Crinkle, False**	? functional disorder
Strawberry Leaf Blotch	***Zythia fragariae*** *syn.–Gnomonia* sp. *Phyllosticta grandimaculans*
„ Mildew	***Sphaerotheca humuli***
Strawberry Xanthosis	*see under* **Yellow-edge,** strawberries
Stunt	*see under* **Plum Stunt; Rubus Stunt**
Sun Scald	*see under* **Functional disorders**
Superficial Cork	*see under* **Functional disorders**
Surface Canker	***Myxosporium corticola***
Sweet William Rust	***Puccinia lychnidearum***
Tomato Blight	***Phytophthora infestans***
Tomatoes, **Blotchy Ripening and Green Back**	a functional disorder
„ , **Leaf Mould**	***Cladosporium fulvum***
„ , **Spotted Wilt**	a virus
„ , wilting	***Fusarium lycopersici***
Tree Pit	*see under* **Functional disorders**
Vein-chlorosis, raspberries	a virus
Verticillium Wilt, cherries	***Verticillium dahliae***
„ „ , general (various hosts)	„ **spp.**
„ „ , hops (fluctuating and progressive)	„ ***albo-atrum***
„ „ , plums	„ ***albo-atrum***
„ „ , quinces	„ ***dahliae***

Common English Name	Cause or Causative Organism
Verticillium Wilt, rhubarb *syn.*–Rhubarb Wilt	***Verticillium* spp.**
,, ,, , strawberries	***„ dahliae***
Vine Mildew	***Uncinula necator***
Violet Felt Rot	*see under* **Violet Root Rot**
Violet Root Rot *syn.*–Violet Felt Rot	***Helicobasidium purpureum,*** perfect stage *syn.–Rhizoctonia crocorum* *Rhizoctonia violacea*
Walnut Bacterial Blight	***Xanthomonas juglandis*** *syn.–Pseudomonas juglandis*
,, **Leaf Blotch**	***Gnomonia leptostyla,*** perfect stage *syn.–Marssonia juglandis* *Marssonina juglandis*
Walnuts, dieback	due to various fungi
,, , **Graft Disease**	***Chalaropsis thielavioides***
Water Core	*see under* **Functional disorders**
Witches' Brooms, cherries	***Taphrina cerasi*** *syn.–Exoascus cerasi*
Wither Tip, cherries and plums	***Sclerotinia laxa***
Yellow-edge, strawberries *syn.*–Strawberry Xanthosis Yellows, strawberries	a virus
Yellows, raspberries	a virus
Yellows, strawberries	*see under* **Yellow-edge,** strawberries